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ABSTRACT

This document reports on the development of an apprenticeship work-study model--a new model for training personnel for educational research and development. The model provides short-term training in applied research and development (R & D) for persons holding B.A. and M.A. degrees by featuring individualized learning and "real-time" experience on actual R & D projects. The training model was pilot tested with six unemployed physical scientists. During the three-month program, trainees spent approximately half of their time studying education topics and problems, and the other half working as apprentices on R & D projects. An individual set of objectives was determined for each trainee. Learning activities, including group events, guided independent study, and apprenticeship tasks, were then individually prescribed on the basis of the trainee's objectives. The results indicate that the training model is effective, efficient, and appealing to both employees and trainees. It is concluded that the model can be of use in independent training programs, as an adjunct to regular academic programs, or for inservice training. It is also an example of how unemployed professionals may be cross-trained for a new field. (Author)

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FINAL REPORT

Project No. 1-0694
Grant No. OEG-0-71-4712

Eugene J. Millstein
Judith M. Melnotte
James A. Dunn

DEVELOPMENT OF AN APPRENTICESHIP WORK-STUDY PROGRAM MODEL FOR THE CROSS-TRAINING OF PHYSICAL SCIENTISTS FOR WORK IN EDUCATIONAL RESEARCH AND DEVELOPMENT

February 1972

U. S. Department of Health, Education, and Welfare
Office of Education
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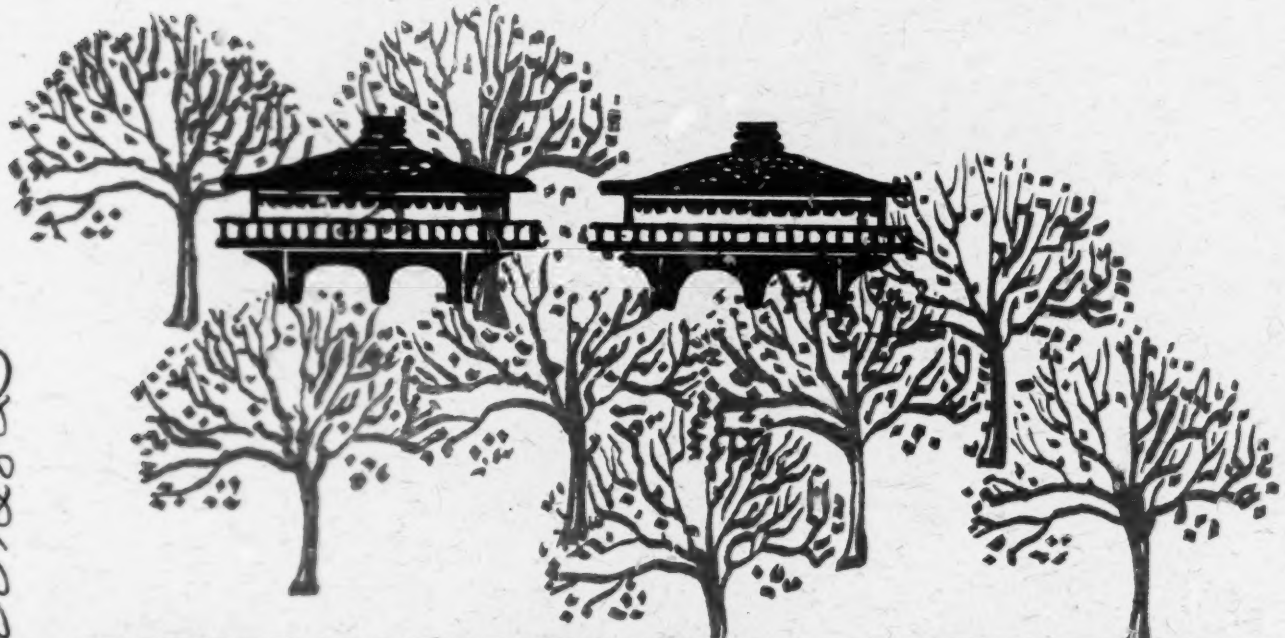

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U.S. Department of
Health, Education, and Welfare

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ABSTRACT

The goal of this project is to develop, pilot test, and document a new model for training personnel for educational research and development. The model provides short-term training in applied research and development for persons with B.A. and M.A. degrees. It features individualized learning and "real-time" experience on actual R&D projects. The model developed can be of use in independent training programs, as an adjunct to regular academic programs, or for in-service training. It is also an example of how unemployed professionals may be cross-trained for a new field in which their skills are in demand. A manual submitted with the final report prescribes procedures and materials for conducting a training program based on the model developed in this project.

The training model was pilot tested with six unemployed physical scientists. During the three-month program trainees spent approximately half of their time studying topics and problems in education, and half of their time working as apprentices on R&D projects. An individual set of objectives was determined for each trainee. Learning activities, including group events, guided independent study, and apprenticeship tasks, were then individually prescribed on the basis of the trainee's objectives. Evidence from the pilot test suggests that the training model is effective, efficient, and appealing to both employers and trainees.

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CHAPTER 1

INTRODUCTION

Problem

In the coming decades the need for quality personnel at all levels in the field of educational research and development will be critical. This project deals with that emerging need. A new training model has been developed, pilot tested, and documented. It may be employed either to improve the skills of those already working in the field, or to train new people for the field.

The need for personnel in educational research and development has been projected in a number of studies. In a 1969 study, Clark and Hopkins proposed three different estimates of potential growth in the field between 1964 and 1974. Current economic conditions suggest that their lowest estimate will prove correct. This low estimate, however, calls for a three-fold increase in personnel requirements during the period. Any shortage in the supply will result in insufficiently trained personnel filling positions. In a still more recent study, conducted after the advent of the economic slowdown, Fleury, Cappelluzzo, and Wolf (1970) also predict a shortage of trained personnel. Their analysis suggests that current programs supply personnel only for conventional university level research positions. Almost no training is available to meet a growing demand in applied work including development and evaluation. Furthermore, current training focuses on the doctoral level, while evidence indicates a growing need for personnel at other levels also.

Far West Laboratory (Hood et.al., 1971) conducted a survey of employers in the San Francisco Bay area. The sum of the projected need for new personnel came to 255 in 1971-1972 alone. Most of the positions were predicted to require the B.A. or M.A. degrees. The report also concluded that Clark and Hopkins' low estimate was probably correct, but too narrow in scope. Far West predicts an additional demand for 1) professionals from industries not strictly defined in the educational development area, and 2) paraprofessionals. In general, a shortage of quality personnel in educational research and development would present a serious obstacle to the progress so critically needed in the field.

For the most part, current training employs classroom techniques, emphasizes doctoral degrees in pure research, and requires several years for completion. Internship components are usually part-time and highly artificial. There is a real need for a new model which will provide effective short term training in applied research and development. The need for training efficiency suggests that the model should provide individualized learning and real time experience on actual projects in educational research and development. The model must be maximally attractive to both trainees and host organizations.

While researchers speculate about a possible shortage of personnel in educational research and development, a great surplus of personnel in the physical sciences exists. Unemployment in the physical sciences is a problem to which this project also speaks. More than 65,000 engineers were unemployed in April of 1971 and that number was expected to increase as the year progressed (Gooding, 1971). Such unemployment results in a waste of talent and a good deal of personal hardship.

General Approach and Rationale

The goal of this project is to develop a new model for training personnel in educational research and development. The project explores the model's application to the problem of cross training unemployed physical scientists for work in educational R&D. The program aims to cross train rather than train or retrain. Cross training may be defined as a process in which students are taught to apply their existing skills to new situations. Transfer of skills, rather than the teaching of new skills, is emphasized. Physical scientists are skilled in useful analytical and empirical approaches to problem solving. They may bring new skills and new points of view to educational problems. They represent a potential source not only of competent professional work, but of creative innovation.

The training model can best be described as apprenticeship work-study. Trainees spend approximately half of their time studying topics and problems in education and half of their time working on actual R&D projects. Important features of the model are that it is short term; it emphasizes the transfer of existing skills; it is individualized; and it includes apprenticeship work.

Although most training is not individualized, individualization is clearly recognized as a desirable component for all instruction. Generalities need not be discussed here. Several reasons behind the particular importance of individualization to this model should be mentioned, however. 1) Because the program aims to apply the existing skills of participants, special attention must be given to the particular skills each individual has. 2) Because the program calls for short term, efficient training, instruction must be tailored to the learning strengths and objectives of each individual.

The apprenticeship component is valuable for the following reasons. 1) It allows the trainee to immediately begin applying his existing skills in the new context of educational R&D. 2) It provides a framework for the academic work; it highlights the relevancy of the studies, and thus adds to the trainee's motivation. 3) It permits a trainee to refine and develop his career objectives in the light of real experience. 4) It promotes rapid learning.

Objectives of Project

The central objective of the project is to develop and pilot test an apprenticeship work-study model. The model must be one which can be exported and duplicated. Within this broad objective, the project aims to develop and define:

1. procedures and materials for managing the instructional system,
2. an outline of the curriculum,
3. procedures for arranging and managing apprenticeship positions,
4. procedures for recruitment, selection, and a trainee support system,
5. procedures for assisting trainees to secure jobs in educational R&D.

From the point of view of the trainees, the objective of the training program model itself is to make them employable in the field of educational R&D. Toward this goal, the trainees will be given the opportunity to:

- study educational R&D,
- analyze the interests and skills they now possess which are applicable to educational R&D,
- establish, with professional assistance, a personal set of learning objectives,
- pursue the development of the additional skills and knowledge required to meet the new career goals they establish for themselves,
- acquire "real-time" experience through supervised apprenticeships on actual R&D projects,
- take advantage of job leads and contacts provided by the program.

An Overview of the Model

Length of program--Approximately three months, but flexible.

Site--An educational research and development organization.

Target population--Flexible. Program may be targeted for in-service trainees, for students, or for other persons wishing to enter the field of educational R&D. In this pilot test, unemployed physical scientists wishing to transfer to educational R&D were selected.

Instructional system--Individualized program of studies for each trainee based on a set of personal instructional objectives.

Curriculum--Learning theory. Instructional methods and materials. Evaluation and evaluation models. Measurement. Educational statistics. Legal, social and political aspects of education. Proposal writing. Comparative task analysis between physical science and educational R&D. Employment possibilities.

Recruitment procedures--Depends on target population. The pilot test used a classified advertisement, a press release, and state unemployment agencies. Application stages included submission of a resume and information sheet, written tests, and an interview.

Selection criteria--Evidence of interest in education. Existence of specific personal career objectives in education. Existence of skills useful in education. Reasonable salary expectations. Evidence of success in college and employment.

Stipend--Depending on the target population the program may or may not include a trainee stipend. The pilot test included a living expense stipend of $75 per week plus $15 per week per dependent.

Assistance with job placement--Assistance in locating openings and applying for jobs. Employment recommendations.

CHAPTER 2

THE INSTRUCTIONAL MODEL

This chapter is divided into three basic sections. The first section is an outline of the curriculum. The second section describes the instructional system. It includes information on how individual trainee objectives were determined, how learning activities were prescribed, and how trainee progress was monitored. The third section describes the apprenticeship component of the model. It includes information on the kinds of apprenticeship tasks performed, and how they were selected, assigned, and monitored.

Outline Of Curriculum

The cross-training model features individualized instruction. Trainees were given assistance in selecting a set of individual objectives. They then participated in learning activities which helped them meet these objectives. The individual progress of each trainee was monitored. Learning activities included the apprenticeship, guided independent study, and group instruction. This section is devoted to the content or curriculum within this instructional system. Specifically, it focuses on the content of the group instruction and the guided independent study. The content of the apprenticeship is further discussed in another section.

The instructional objectives define the overall curriculum of the program. Appendix A contains a list of the 130 instructional objectives used in this program. A variety of sources were consulted in the development of objectives including materials produced by the Far West Consortium for DD&E training. Objectives are organized into the following skill categories:

- library skills,
- instrumentation,
- data collection,

- data analysis,
- proposal preparation,
- product development,
- evaluation,
- marketing, dissemination,
- implementation,
- write-up and publication,
- scheduling and management.

At the beginning of the program a large amount of time was spent in group activities and assignments. As the program progressed, however, trainees began to spend more time in individual activities.

Group Activities

Group activities and assignments during the program are shown in Appendix B. Activities included lectures, seminars, reading assignments, films, field trips, and other activities. Lecture and seminar topics included the following:

- Introduction to and overview of the cross training program (Millstein)
- Overview of educational research and development (Melnotte)
- Summary of educational R&D projects currently being conducted at AIR (Melnotte)
- AIR in the broader context of educational R&D (Dunn)
- Future role of education R&D and AIR's objectives (Tiedeman)
- Kinds of apprenticeship positions available (Millstein)
- General skills involved in educational R&D (Dunn)
- Developing instructional materials (Steel)
- Behavioral objectives (Millstein)
- Programmed instruction (Millstein)

- Computer-assisted instruction (Millstein)

- Incentives and accountability (Jung)

- Data collection with young children (Dunn)

- Behavior modification (Lipe)

- Proposal evaluation (Ausloos)

- Job search strategies (Millstein)

More than fifteen books and journal articles were designated as assigned reading for everyone in the group during this program. Assignments were selected to prepare trainees for the seminars and lectures. Titles are detailed in Appendix B. In addition to reading, assignments called for activities such as solving educational statistics problems or writing a set of behavioral objectives.

Several films, appropriate to the seminar topics, were shown. They included:

D. Markle, Programmed Instruction: The Developmental Process
J. Harris, Project CVIS
AIR, Project PLAN
J. Dunn, Data Collection with Young Children

An excellent source for assistance in the selection of appropriate films is Schneider, J. M.; Barnett, A.; and Addis, M. Films in the Behavioral Sciences: an Annotated Catalogue. The catalogue contains descriptions of approximately 1300 films. They are organized both by title and subject area.

Trainees participated in two field trips -- one to the Brentwood school, an innovative school in a black neighborhood, and the other to Educational Testing Service. Both events featured intensive round table discussions with representatives of the institutions. Trainees also attended a 2-day professional conference on guidance.

Group activities may be further described by presenting several examples in more detail. The prescribed activities for studying behavioral objectives will serve as a general example. Trainees read Mager's book Preparing Instructional Objectives. They wrote three behavioral objectives in a subject of their own choosing. They then reviewed the behavioral objectives specified in Project PLAN, selected five well-written objectives and five poorly written objectives, and explained the reasons behind their selection. The assignments were checked individually. Trainees who experienced difficulty writing objectives were asked to write more. Each trainee was expected to demonstrate mastery of the basic concepts. Near the close of the day trainees participated in an hour seminar on behavioral objectives. As a team, they tackled a problem more difficult than the individual assignments worked on earlier in the day.

The events on October 1 exemplify a different kind of group activity. The morning consisted of a field trip to the Brentwood School - a public elementary school in a black neighborhood. It features innovative instructional procedures and a sophisticated computer-assisted instruction system. The early part of the morning was spent in a round table discussion with Brentwood's principal and three teachers. The discussion centered on skills that physical scientists have which are relevant to educational problems in the Brentwood school and schools like it. Next trainees were given a tour of the computer-assisted instruction system while it was being used by the elementary school students. Trainees also had the opportunity to sit at a computer terminal and experiment with this mode of instruction. In the afternoon a lecture-seminar was held at AIR on computer-assisted instruction. Discussion focused on special advantages and limitations of the technique. This was followed by a presentation for those interested in the more technical aspects of C.A.I. including an overview of the computer language and a review of cost factors.

A third kind of experience is exemplified by activities on October 7 and 8. On these days AIR hosted the Eighth Invitational Conference on Systems Under Construction for Career Education and Development. Papers presented at the conference fell into two categories: 1) models for career education and 2) reports on the status and progress of various guidance systems. Trainees attended all sessions of the conference. It provided the opportunity to review the most recent accomplishments in the field, to meet professionals in the field, and to witness professional customs and modes of operating.

Guided Independent Study

Individual study was intense. Taken all together trainees read more than 110 different journal articles and books. In addition to reading, activities included writing papers and discussing educational issues with AIR professionals. Individual areas of interest ranged from philosophical investigations of the process of thinking to cost effectiveness in schools. The guided independent study engaged in by each trainee is detailed in Appendix C.

As an example of an independent study project, one trainee wrote a 21-page position paper on his hypothesis that school curriculum must be changed to put heavier emphasis on the development of problem solving skills. In order to write the paper he reexamined and studied works by Dewey, Shaw, Oettinger, Coleman, Simon, Berg, Hebb, and Bloom.

As another example of an individual activity, one of the trainees attended the U.S.O.E., Region 9, small grants review panel in Reno, Nevada. He was thus given the opportunity to study the criteria and procedures whereby U.S.O.E. funds small grants in educational research. Upon his return, he conducted a lecture-seminar for the other trainees on this topic.

Instructional Materials and Resources

A list of instructional materials and resources is shown in Appendix D. The list contains basic works relevant to all trainees and more specific works relevant to the individual objectives of trainees in the program.

Consideration was given to the use of three sets of materials currently being developed to train personnel for educational research and development. Materials are being developed independently by Eva Baker at U.C.L.A., George Gropper at American Institutes for Research in Pittsburgh, and the Far West Consortium for Development, Dissemination, and Evaluation Training. A decision, based primarily on immediate availability and convenience of use, was made to use some of the Far West materials.

When completed, the Far West Consortium program will contain materials for maters level courses in information/data collection and organization, communication skills, planning and design, developmental engineering, evaluation, dissemination marketing, analysis and definition, and management. Few of these materials were ready for use during the cross-training program. Several modules in the information/data collection and organization course were used extensively, however. Five of the six trainees studied the modules Data Collection and Data Analysis. Because these modules were in the development stage, the trainees had the opportunity to participate in their improvement and revision. After studying the modules, they prepared as a team a set of proposed improvements.

General Comments on the Curriculum

In order to meet the requirements of individualization, the curriculum should be a fluid resource rather than a fixed one. It should constantly expand and change to meet the needs of trainees enrolled in the program. Objectives will vary in importance depending on the individual interests and goals of the students. The curriculum must be fluid enough to accommodate these variations. If possible, there should be a variety of resources appropriate to each of the objectives.

Every new program should result in an addition to the curriculum materials base. This should be the natural result of programs which cater to individual interests and goals in the context of a field which constantly changes and progresses.

As an interesting side point, it was found that materials and reports produced by the host institution as part of their regular R&D activity were particularly effective for curriculum use. Professionals at the host institution had special knowledge about these works and consequently communicated a particular enthusiasm and interest.

In general, the curriculum base outlined in this chapter proved to be an effective resource. Materials were provided which were relevant to trainee interests, goals, and work. The curriculum may also be easily adapted for use with future cross-training programs. Almost all materials are readily available. It will be necessary, however, for any host institution to have a library or very easy access to one. AIR has an extensive library in the fields of psychology and education plus access to all Stanford University libraries.

Instructional System

Overview

The instructional system was established to perform three basic functions.

- Assist the trainees in determining an individual set of objectives.
- Prescribe learning activities -- including group activities, guided independent studies, and apprenticeships -- which will help trainees meet their individual objectives.
- Monitor trainee progress toward his objectives. Help him redefine and focus his objectives. Prescribe further learning activities on the basis of these redefined objectives.

The system was maintained by an instructional manager, in this case the project director, who worked closely and individually with each of the trainees to insure that the three functions were performed.

Determining Individual Objectives

The array of objectives provided in the program has already been described in the Outline of the Curriculum and in Appendix A. It is the use of these objectives which is of concern in this section.

The list of objectives provided the trainees with an overview of the different skill areas in educational research and development. It served as a general framework to which all study could be related.

At the outset of the program, trainees were understandably unprepared to select a very specific set of objectives. They were new to the field, and their knowledge of what the different areas of educational R&D involve was hazy. Personal goals at this time usually involved sampling many of the areas in order to achieve a more comprehensive view of the field. As the program progressed, trainees were able to select more specific objectives.

The trainees were assisted in their selection of objectives in two major ways. First, the instructional manager met individually with each of the trainees to discuss the individual's general goals and interests and his educational and employment background. From this discussion an attempt was made to establish a set of appropriate objectives. As the program progressed, periodic meetings with the instructional manager led to refinement and focus in this set of objectives.

Second, each trainee was asked to study the list of objectives already described and shown in Appendix A. For each objective he was to note one of the following:

1) could do before program,
2) acquired during program,

3) cannot do,
4) if "can do," note degree of expertise,
   a) slight,
   b) moderate,
   c) strong,
5) would like to emphasize in balance of program

This exercise was repeated during the program to assist the trainee in the refinement of his personal set of objectives.

Trainees were able to refine their set of objectives because of their experience in the program. As they worked on apprenticeship projects, and as they spoke with various AIR professionals, their understanding of the field became deeper and they were thus better able to assess their own interests and abilities vis a vis educational R&D.

Prescribing Learning Activities

Based upon the individual set of objectives of each trainee, a set of learning activities was prescribed. The actual learning activities -- group activities, independent studies, and apprenticeships -- are described in the sections on the Curriculum and the Apprenticeship. It should be noted, however, that these activities were suggested in response to individual objectives. For example, one of the trainees was particularly interested in proposal writing and sources of funds. In order to help meet his objectives in this area, he attended the U.S.O.E. small grants review panel. This activity has previously been described. Another trainee, interested in deepening his understanding of curriculum development, wrote a paper on the need for emphasis on problem solving skills in the curriculum. Many of the group activities, including the seminars and field trips were scheduled because they were appropriate to objectives specified by almost all of the trainees. Group activities were far more frequent during the first half of the program because most of the trainees were then interested in sampling the various areas of educational R&D.

One of the instructional manager's most critical tasks is the prescription of learning activities in response to individual objectives. The instructional manager must be familiar with the literature in educational R&D. He must also be familiar with the people and resources in the host institution, and in institutions in the surrounding area. In this way he will be able to prescribe learning activities appropriate to varied sets of objectives. In situations in which the instructional manager lacks the required knowledge of a specific area, he should draw upon the knowledge of colleagues at the institution.

To prescribe a learning activity, the instructional manager should follow these steps:

1. Consider the instructional objective.
2. Suggest an appropriate learning activity to the trainee.
3. Discuss the activity with the trainee. Consider his reactions to the assignment. Outline a schedule for completion.

The learning activities described above and in the chapters on the curriculum and the apprenticeship fall into two categories: 1) Many of these activities are directly exportable to other educational R&D settings. They rely on nothing unique to the AIR environment; they involve instructional materials, tests, films, etc. which are readily available. Other organizations adopting this model will thus have important segments of the curriculum specified. 2) Some activities depend on unique conditions. This program took advantage of the fact that B.F. Skinner happened to appear on educational television and a professional conference on career education happened to occur at AIR during the training program.

In order to take advantage of this second type of activity, the instructional manager should be very alert to educational R&D events in the area. Professional conferences, important lectures, research facilities, model educational programs, all offer the potential for rich learning activities responsive to specific individual objectives.

Monitoring Trainee Progress

To insure effective learning, careful monitoring of each trainee's progress was performed. Monitoring was accomplished in two ways -- periodic individual meetings with trainees and weekly logs submitted by trainees. Meetings between the instructional manager and individual trainees took place twice a week. Meetings focused on progress to date, future objectives, and strategies for attaining these objectives. The instructional manager recommended specific objectives, suggested particular learning activities, or alerted the trainee to various AIR professionals working on project of interest to the trainee. The meeting was also an opportunity for the trainee to make complaints or suggest improvements in the overall program.

In addition to these individual meetings, each trainee submitted a weekly log of his activities, progress, and reactions to various components of the program. This was a useful complement to the meetings because certain individuals are more expressive in written mode, others are more expressive in conversational mode.

At the beginning of the program the format and general content of the log were left to the discretion of the trainee. As the program progressed, however, it was decided to provide trainees with a specific format. This format called for the answering of the following questions:

- Describe your apprenticeship activities.
- Note any meetings you had with AIR staff members. Describe the general purpose of the meeting.
- List your readings during the week. Note whether they were related to apprenticeship activities, independent study, or group activities.
- Describe your job search activities.
- Think about and list transfer skills and new skill you have which would be attractive to potential educational R&D employers.
- Further comments

An example of the log format is shown in Appendix E. In general, the logs provided a very effective source of information on trainee progress and attitudes.

Information obtained in the logs was used in the individual meetings to help revise objectives and prescribe further learning activities.

General Comments Regarding the Instructional System

The instructional system model developed in this project provides a large array of objectives and a large selection of learning materials, suggested activities, etc. For operation the model does require an instructional manager who understands the objectives and is familiar with the learning materials. The instructional manager should also be familiar with the people and resources of the host institution and the educational R&D activities in the area.

The instructional manager does not teach in the traditional sense of the word. Rather he performs three basic functions. He assists trainees in determining their individual objectives. He prescribes learning activities which help trainees meet their objectives. And he monitors the progress of these trainees in meeting their objectives.

In general, the system worked well. Training was efficient and individualized. Demands on the instructional manager's time and abilities were quite reasonable.

Several problems and issues should be mentioned, however. Guided independent study was an important component of the training. One problem was the difficulty of measuring student progress in these activities. For example, suppose a trainee is interested in investigating research on the teaching of reading. To meet these objectives he is assigned to read Chall's book Learning to Read When he completes this book, we have no ready method for measuring his understanding or progress toward his goal. Tests are certainly not available for measuring progress toward all the different objectives. The problem was handled by having the instructional manager assess progress through his frequent meetings with the trainee. This method, by itself, is an admittedly weak approach. There do not appear to be any more effective alternatives at the present time, however. It is certainly not possible for the instructional manager to design tests for all the different objectives trainees are working on. This problem is not unique to this training program. It is encountered in most educational models.

Perhaps the only real strain placed on the host institution was in the presentation of lectures and seminars for the group instructional activities. Preparation time was frequently lengthy, and the cost of and strain on various employee's time became considerable. It should be mentioned, however, that the lectures or seminars on projects in which the presenting staff members were enthusiastically involved were sometimes quite effective and even inspiring.

Trainees differed considerably in their conscientiousness. It is believed that performance by the less conscientious trainees could be improved if a specific incentive system were adopted. As the program was structured, the only real

external incentive was the prospect of receiving a valuable job recommendation. Several incentive systems have been considered for recommendation for future programs. A monetary incentive, say an increase in stipends at regular intervals, was considered undesirable for the following reason. The trainees are accustomed to making a great deal more money than the stipend. Raising the stipend, even by a large percentage, will still seem rather petty and is unlikely to cause changes in trainee behavior.

An incentive system based on grades or evaluation ratings is perhaps preferable. These ratings could be made by the instructional manager and the apprenticeship supervisor at regular periods, say once every four weeks. The ratings would help trainees identify their weak and strong points. The ratings would have incentive power because higher ratings would quite naturally lead to better job recommendations. Ratings must be handled in a dignified, constructive manner.

Although occasion certainly did not arise in this program, future, larger scale, projects should probably make provision for dropping trainees from the program if after several weeks of training they appear entirely unsuitable.

The Apprenticeship

The apprenticeship was probably the most important learning component of this model. In order to fully describe its role and function, this section is divided into six subsections: identifying potential apprenticeship positions, selecting apprenticeship positions, monitoring apprenticeships, external apprenticeship positions, descriptions of actual apprenticeships, and conclusions.

Identifying Potential Apprenticeship Positions

For the success of the program, it was important that there be many apprenticeship positions from which to choose. This permitted assignment of positions most appropriate to individual objectives.

To locate positions each program director at AIR was briefed on the purpose and procedure of the cross-training program and the particular skills and backgrounds of the six trainees. When a program director did have a possible task, the instructional manager collected the following information:

- amount of time required for the task,
- beginning date,
- due date,
- required knowledge and skills,
- description of the task trainee is expected to perform,
- supervisor's assessment of how the task might benefit the trainee,
- names of professional staff with whom the trainees will have contact,
- any written materials on the case in general -- proposals, progress reports, etc.

The instructional manager then determined whether the task met two basic eligibility requirements. First the task had to be compatible with the time constraints of the program. The time required to perform the task could not exceed the amount of time available to trainees; the beginning and due dates had to be appropriate, etc. Second, the task had to represent a rich learning experience. Emphasis was placed on identifying tasks which would require the trainee to learn the basic concepts, approaches, and research designs of the projects involved. The instructional manager eliminated tasks which would not benefit trainee development. Examples include excessively clerical tasks such as coding.

In general, apprenticeship tasks were selected which were part of ongoing projects. The task had to have the potential for allowing a trainee to feel that he was a member of a team working on a contract. Artificial assignments were avoided. Trainees were expected to make real contributions to projects.

Assisting Trainees in Selecting Apprenticeship Positions

The instructional manager suggested possible apprenticeship positions to trainees in the periodic individual meetings. Suggestions were based on the trainee's set of objectives. Every trainee was provided with at least five alternatives. If a trainee was interested in a particular project, he would read the written materials available on it. After reading these materials, if he were still interested, a meeting was arranged between the trainee and the appropriate project director. The trainee was asked to read written materials first so that he would have a relatively good understanding of the project before taking up the project director's time. The final selection of the apprenticeship was based on the meeting between the trainee and the relevant project or program director.

Monitoring Apprenticeships

There were several objectives in monitoring the performance of trainees in the apprenticeship. Most importantly, it was to assure that each trainee made continuous progress toward his selected objectives. Trainee awareness of the monitoring probably also encouraged conscientiousness. Finally monitoring served to remind supervisors that the trainee was there not only to work, but to learn.

The instructional manager monitored the apprenticeship by collecting information from the trainee and the trainee's supervisor in the task. Information from the trainee was collected via the periodic meetings and the logs. The following issues were noted and discussed:

Do you feel you are making efficient progress toward your objectives?

What knowledge and skills have you learned in the apprenticeship?

What knowledge and skills do you hope to learn in the near future?

Are there any particular problems? Unclear directions? Lack of supervision? etc.

Information from the trainee's supervisor was attained through periodic individual meetings which focused on the following questions.

How well is the trainee performing? What are his weak points, his strong points?

What do you believe the trainee has learned in terms of skill, knowledge, and affect?

In what areas do you believe he needs further study?

Are there any particular problems?

The information attained from these discussions with both trainee and supervisor was used to make any adjustment necessary to improve the effectiveness of the apprenticeship. It should be noted that most apprenticeships worked out well; frequent adjustments were not required. In a few cases, tasks were terminated earlier than originally anticipated, and trainees switched to other apprenticeship positions. This was not awkward since the program was structured so that all trainees would work on several different kinds of apprenticeship tasks.

External Apprenticeship Positions

In order to maximize the number and variety of potential apprenticeship opportunities, positions outside of AIR were also sought. The instructional manager met with the president and business director of Foothill Community College to identify potential positions there. Meetings were also held with administrators at DeAnza Community College, Ravenswood School District, and Sequoia School District Research Department. In each case several potential apprenticeship positions in educational research were identified.

One of the trainees became heavily involved in an apprenticeship position at DeAnza. Three other trainees worked on short term but valuable apprenticeships at Foothill and Ravenswood. In each case the outside apprenticeship was one of several apprenticeship tasks on which the trainee worked. The other tasks took place at AIR.

The steps followed in identifying, assigning, and monitoring external apprenticeship were quite similar to those for internal positions. In order to formalize the agreement, a representative from the institution sponsoring the apprenticeship was asked to write a letter detailing the arrangement. Letters were to include name of trainee, name of supervisor, name of institution, period of apprenticeship, description of apprenticeship task, and descrition of the professional supervision and institutional resources available for the trainee.

Copies of the letters received from the president of DeAnza College and the Director of Business Services for the Foothill Community College District are shown in Appendix F.

Description of Apprenticeships

As previously mentioned, each trainee participated in several different kinds of apprenticeships during the program. These tasks have also differed widely among individuals. Examples of actual tasks performed include the following:

- Development of a proposal on environmental education (for DeAnza College)
- Review and analysis of the development of one educational product. Part of an AIR project to examine the process of development of successful educational products.
- Assistance in the writing and production of a paper on employer-based career education.
- Assistance in the development and definition of evaluation criteria. Part of an AIR project to develop a system for evaluating regional educational laboratories and R&D centers.
- Research and review of the literature on the evaluation of educational administrators.
- Assistance to the Ravenswood School System in using its computer to work on educational problems.
- Critical review and revision of the Foothill Community College Five Year Plan. Emphasis on student enrollment predictions.
- Assistance on the AIR project, Cooperative Longitudinal Study of Demonstration Education Programs. Worked on the design of three questionnaires for parents and teachers of children in the study.
- Research and presentation of information on sources of funding, nature of studies, and proposal due dates.

A more comprehensive list is included in Appendix H which describes all the individual activities of each trainee.

It may be useful to describe in more detail two examples of apprenticeship tasks. One trainee served his apprenticeship at DeAnza Community College under the supervision of Florin Caldwell, Director of Institutional Research. This trainee wrote one proposal for the college which involved establishing workshops in environmental education for secondary school teachers. The trainee made

contact and enlisted the cooperation of the Sunnyvale school district. The proposal was submitted to the Luke B. Hancock Foundation. The college was pleased with the proposal and the trainee quite clearly learned a great deal from the experience of writing it. Recent information indicates that the proposal was unfortunately not funded. It will be submitted to other foundations and agencies, however.

Another trainee became very involved in AIR's project in Employer-Based Career Education (EBCE). Employer-based career education is a proposed alternative to traditional secondary schools. AIR's project involved writing position papers on the system's feasibility in two areas -- individualization and pupil personnel services. The trainee involved in this project performed two tasks: (1) He coordinated final production of the papers including printing and distribution. (2) Under supervision of the project director, he drafted one section of the paper on pupil personnel services.

Conclusions

The apprenticeship was a very successful component of the cross-training program with a number of advantages for both the trainee and the host institution. In terms of advantages for the trainee, the following points may be made.

- The experience highlights the relevancy of the seminars and the guided independent studies. It helps the trainee identify and refine his set of learning objectives.

- The experience produces very efficient learning. Task demands frequently reinforce relevant skills and knowledge.

- The apprenticeship provides the trainee with a real world framework by which to guide his own career pursuits. He has first hand experience with what educational R&D jobs are like and what employees do from day to day.

- The apprenticeship gives the trainee a relevant R&D work accomplishment which may be listed in his resume. This hopefully increases his credibility to educational R&D employers.

- The apprenticeship may provide the trainee with important professional contacts. Among other advantages, these contacts may lead to employment either at the host institution or elsewhere.

Two advantages to the host institution may be listed.

- The apprenticeship may lead to employment at the host institution. When this occurs, the institution will have benefited from a free trial period in which to evaluate the trainee.

- The host institution may benefit from the ideas and skills the trainee brings from the physical sciences.

The fact that the trainee provides free labor on contracts is not a clear advantage. It is probably balanced by the necessity to provide very thorough supervision.

In terms of the apprenticeship component, the most important requirement for an institution planning to host a cross-training program is that it have a number of different projects with a variety of potential apprenticeship tasks.

CHAPTER 3

RECRUITMENT AND GENERAL PROGRAM MANAGEMENT CONSIDERATIONS

This chapter is divided into four sections--publicity, application procedures, selection procedures, and program management considerations.

Publicity

Publicity designed to produce applicants for the program consisted of a classified advertisement, a press release, a fact booklet, and notification of the state and professional agencies.

Classified Advertisement

A copy of the classified advertisement is shown in Appendix G. In order to be both effective and clear, the advertisement contained the following information:

- purpose of the program,
- type of organization administering the program,
- length of program,
- location of program,
- fact that it is a small pilot program,
- brief statement about the instructional content,
- brief statement about the instructional methods,
- statement on job placement assistance - male and female,
- eligibility requirements,
- stipend and transportation costs
- telephone number
- dates and time to call.

In addition to this information, a larger print, attention producing, opening sentence was designed. Although this appears to be a great deal of information to include in a classified advertisement, it was all included in one ad no larger than one column by 2 1/4 inches.

The advertisement appeared in newspapers according to the following schedule:

State of Washington

Thursday, August 12 - The Seattle Times
Sunday, August 15 - The Seattle Times

State of California

Sunday, August 15 - The San Jose Mercury-News

Because of a small error in printing, the newspaper reprinted the ad free in its morning and evening editions on Wednesday, August 18.

Thursday, August 19 - joint classified ad section of the San Francisco Chronicle and the San Francisco Examiner.

There are two basic criteria for judging the success of the advertisement. Does it attract appropriate applicants? Do the applicants understand the general nature of the program? On both counts the ad appears to have been successful. It produced a total of 250 calls in Seattle and Palo Alto. These callers did seem to understand the nature of the program. Understanding was indicated by the questions callers asked. A record was kept of all such questions.

The ad was printed in the column entitled, Help Wanted, Men and Women. One unexpected problem was a reluctance on the part of newspaper representatives to print the ad in the help wanted section. They argued that the ad belonged in the employment aids section because it was training rather than a job. We felt the ad would receive better exposure in the help wanted section. We argued that the trainees would receive a stipend, and that the terms of the program were clearly explained in the ad. In the end, all newspapers did print the ad in the help wanted section. A surprising number of man-hours were required to resolve the issue, however.

Press Release

A copy of the press release is shown in Appendix H. The article gives a general overview of the program. Information is presented on what educational researchers actually do since this is generally an unknown field to the public. A press release concerning unemployed aerospace workers is of high regional interest and is likely to be noticed by newspaper editors.

The release was submitted to the following major newspapers on August 11, 1971.

State of Washington

Seattle Post-Intelligencer
Seattle Times
Tacoma News-Tribune

State of California

San Francisco Chronicle
San Francisco Examiner
Oakland Tribune
Palo Alto Times
San Jose Mercury-News

Press releases were also submitted to 15 radio stations and 4 television stations. News articles have appeared in the Seattle Times and the Palo Alto Times. Copies of the articles appear in Appendix H. The release was timed to coincide with the advertisement, thereby increasing the number of aerospace workers who would know of the program while the opportunity to apply still existed. Because of this the press release was written to describe the program before it began.

One effect of the newspaper articles was to alert local educational institutions to the program. We received three calls from administrators who were interested in having trainees work with them as apprentices on particular educational research and development projects. These opportunities were considered in terms of the individual objectives of the trainees. Several working relationships did develop and will be described in the section on the apprenticeship.

One minor but potentially troublesome problem is newspaper editing of the press release. For example, it its article the Seattle Times claimed that 20 unemployed aerospace workers would be selected for the program. Such a statement did not appear anywhere in the press release.

Fact Booklet

In order to provide comprehensive information on the program to prospective applicants, a small fact booklet was developed. Structured in question and answer format, it covers the following information from the point of view of the applicant.

What is the purpose of the program?
Who are the sponsors of the program?
Where will I be trained?
When does this program start and how long does it last?
What will the training involve?

What kind of background must I have to be eligible?
How will trainee selection be made?
Will I be paid during training?
Do I pay income tax on my stipend?
What kind of activities are involved in educational research and development?
Will I be guaranteed a job?
What kind of job responsibilities and salary can I expect if I am successful in future job placement?
Where are educational R&D jobs located?
What arrangements will be made for living accommodations during training?
Will I need a car?
What provisions will be made for my household and family?

Content of the entire booklet is shown in Appendix I.

The fact booklets distributed in the states of Washington and California differed in only one respect -- information on unemployment benefits. The Washington booklet informed applicants that they would be eligible for unemployment benefits during training. The California booklet did not. Trainee eligibility for unemployment benefits will be discussed in a later section of this report.

The fact booklet has been judged effective because almost all applicants understood the basic format of the program. Several recurring questions by applicants did indicate four points on which the booklet could be improved. 1) If aerospace affiliation is a requirement in the field test, then this requirement must be more specifically defined. 2) It is suggested that unemployment per se whether it has been for one day or one year should render the applicant eligible. It is also suggested that applicants who are underemployed should be eligible. 3) The fact booklet should emphasize R&D. It should explicitly state that the program will not prepare trainees for teaching. 4) The U.S.A. permanent residency requirement should be explained.

Notification of State and Professional Organizations

The state unemployment agencies were contacted and the program explained. These agencies then posted information on the program. In California each of four local offices had to be contacted separately in order to insure that information would be posted.

In addition to the regular state agencies, both the Seattle and San Francisco areas have self-help associations composed of unemployed engineers and aerospace professionals. The program was explained to representatives of Talent Plus in Seattle and Experience Unlimited in the San Francisco Bay Area. Members of both these associations did submit applications.

Female Applicants

Affirmative action was taken to encourage women to apply to the program. State unemployment offices were informed of the need for more female applicants. Representatives of self-help associations of unemployed aerospace workers were contacted and asked to refer women in particular for the program. The advertisement and press release were specifically worded to emphasize both male and female trainees. The number of women in the manpower pool is discussed in the companion report to this project, the feasibility analysis (Melnotte, 1971).

Application Procedures

Upon hearing about the program an interested person called the designated phone number. We answered any initial questions the caller had and then offered to send the fact booklet and an application. This was a very efficient procedure. Each interested person received complete information on the program. Alternative procedures such as orally describing the program to each caller, or conducting explanatory sessions for prospective applicants would have been more expensive and would not have insured each applicant complete information.

The publicized number of telephone reception days was three and the majority of calls did come during this period. Late calls were infrequent; they were accepted for two days. Initially, calls averaged roughly one every five minutes in Seattle and one every ten minutes in Palo Alto. This frequency diminished by the third day.

Trainees submitted an application which included the following information:

post high school educational history

employment history

special skills

professional memberships and offices held

publications

honors/awards

minimum salary acceptable after training

The recruitment and selection period was not long enough to secure official transcripts of college records. Applicants were requested to submit a list of their post high courses and grades or an unofficial xerox copy of a transcript. This procedure did expose us to the possibility of receiving falsified records, but this risk was deemed minimal. The alternative was to have no record of college work. In the selection process it was useful to review the kind of courses the applicant had taken in college.

The applicant was also encouraged to answer several questions on his interests and associations in the field of education.

1. In what areas of education are you most interested and why?
2. Has a close associate or anyone in your family been active in the field of education? In what capacity?
3. Do you have skills which you believe are particularly applicable to the field of education? Please specify.
4. Have you had any community or employment experiences which you feel are relevant to activities in the field of education.
5. Further comments, if any.

Criteria for selection will be discussed in the next section. It is appropriate here, however, to make several recommendations for the application which could be used in a field test of the model. All of the information mentioned above was useful in the selection process except question 2. This question was intended to explore the applicant's familiarity with the field of education. In reality, the question provided very little information. Almost every applicant listed a brother-in-law, etc. who was a teacher. Questions 1, 3, and 4 were particularly valuable in the selection process. It might be wise to instruct the applicant to pay special attention to these questions since they will be of primary importance in the selection process. In another area, the application should determine the applicant's status vis a vis U.S. citizenship. According to the law, only U.S. citizens and permanent residents are eligible for the stipend. This is an important consideration for the application; a surprising number of applicants held foreign citizenships.

Selection Procedures

Eligibility

For the pilot test of this model three basic requirements were defined. The applicant had to hold a B.A. or B.S., be unemployed, and be associated with aerospace. The requirement of a B.A. or B.S. was selected not because it was a necessary qualification for successful participation in the cross training program, but rather because securing a job in educational R&D without it might prove quite difficult. Although the rule was strictly enforced, several persons without the degree did apply. In some cases they had strong backgrounds and had advanced quite far in the aerospace industry. In the future, consideration might be given to waiving this rule in exceptional cases.

Description of Applicants

A detailed analysis of the population which applied to the program is presented in the companion feasibility analysis (Melnotte, 1971); a brief description will be presented here. Out of 250 people who called, 175 submitted written applications -- 9 women and 166 men. Of this number, 27.6% had degrees beyond the B.A. or B.S., primarily M.A.'s. The average age of the applicants was 43. The average last salary in the aerospace industry was $14,450. 29.3% had been unemployed for less than 5 months, 27.6% had been unemployed between 5 and 9 months, and 43.1% had been unemployed 10 months or more.

Selection Criteria

Criteria used for selection include the following:

- evidence of interest in education (community participation, specific education ideas),
- existence of specific personal career objectives within the field of education (previous plans or steps taken to change careers, present career objectives),
- existence of skills useful in education (data processing, data presentation, report and technical writing, proposal development, evaluation skills, etc.),
- reasonable salary expectations ($8,000 - $12,000, more only in exceptional cases),

- evidence of success in college (grades, awards, publications),
- relevant course work in college (psychology, education, statistics, sociology),
- evidence of success in employment (promotions, publications, specific accomplishments).

The selection procedures were structured into 4 stages. Parallel steps were followed in the Seattle and San Francisco areas. (1) Approximately the top 24 written applications were selected for each state. (2) These 24 applicants were given written tests and the top 12 were selected for interviews. (3) Interviews were used to select the top 6 from each area. (4) A panel of program directors at AIR selected the final 3 for each area.

Selection of Top Written Applications

Each written application was evaluated by two judges. A grade was assigned using a scale of 1 to 5. For the most part the judges agreed. A third judge was employed, however, in those cases when the first two ratings were in disagreement. Applications from both the Seattle and San Francisco areas were evaluated in the AIR Palo Alto office.

Written Tests

The 24 finalists in each area were phoned and invited to take two tests as part of the selection procedure. In order to avoid raising false hopes, finalists were advised that there were still many more applicants than positions open. The tests for the Seattle applicants were administered at the School of Education, University of Washington. California applicants took their tests at AIR, Palo Alto.

Test 1 was a 1/2 hour writing sample. Applicants were informed that emphasis would be placed on their ability to write clearly and concisely. The question was selected to require no technical knowledge, but to be indicative of the candidates' interest in the field of education. The question was as follows: "Briefly present arguments for and against universal college education in the United States." Each paper was graded separately for (1) clarity of writing, and (2) general content. Both were equally weighted in final selection.

Test 2 was the Undergraduate Record Examination in Education--a standardized multiple-choice test constructed by ETS. The test did require specific knowledge and therefore was primarily used only to eliminate those candidates scoring unusually low.

On the basis of these two tests, twelve applicants from each area were selected for interviews.

Interviews

One-half hour interviews were structured to investigate the following questions. (1) How interested is the candidate in the field of education? Has he seriously thought about a career change into the field? (2) Does the candidate have skills which would be useful in educational R&D? (3) How flexible is the candidate? Is he willing to take a job only in one city, or is he willing to move? (4) Are his salary expectations reasonable? (5) Is he prepared to take an entry level position in a new field after occupying a high level position in his former field? (6) Does he seem to have basic social skills which are required for success in the team approach used in most education research?

Seattle finalists were interviewed the day after testing at the University of Washington. California finalists were interviewed during the two days succeeding testing at AIR, Palo Alto. Six candidates from each area were selected for final screening.

Final Selection

Final choice was made by a panel of program directors at the American Institutes for Research. For each area the panel ranked the six candidates. The top three were invited to join the program. The second three were designated as alternates. Those selected for the program were immediately notified by telephone so they would have maximum time to prepare. This was particularly important for Seattle residents. Contract period constraints were such that even with the special steps taken to insure rapid selection procedures, the Seattle trainees had only two weeks in which to arrange relocation.

Characteristics of the Selected Trainees

Characteristics of the trainees actually selected for the program are summarized in Table 1.

Table 1

Characteristics of the Selected Trainees

Trainee Characteristics	Trainees A	B	C	D	E	F
Age	51	41	42	37	50	28
Number of dependents other than self	2	0	4	2	3	0
Minimum salary acceptable after training program	$12,000	$11,400	Open	$10,000	Open	Open
Field of B.A./ B.S. degree	Chemical Engineering	Physics, Math	Engineering & Psychology	Engineering	Mechanical Engineering	Engineering
Graduate Degree	--	--	Working on M.A. in Psychology	M.B.A. Business	B.B.A. Business/Economics	M.S. Engineering, Science, & Mechanics
Employment Background	Boeing, Management	Boeing, Engineering	Lockheed & Barry Companies, Engineering & Editing	Lockheed Systems Analysis	Boeing Engineering	RCA Taught Short Technical Courses
Months Unemployed	4	18	1	12	8	9
Stated interests in education	Management Systems, teacher learning process, behavior modification	Aptitude & achievement testing, curriculum evaluation	Human growth, maladoptive behavior	Information systems, environmental education	Curriculum, motivation, classroom management, learning management	Instructional techniques, learning systems, course development

The table does not reflect certain special background points of the selected trainees. For example, one trainee was a member of his city's Citizen School Advisory Council. He enclosed a copy of his report with his application. In his interview, this trainee demonstrated a very extensive knowledge in the psychology of learning. This background was gained totally from leisure time reading. Another trainee had made the decision to transfer into the field of psychology or education several years ago. He had begun taking graduate courses in psychology. He saw the cross-training program as an ideal opportunity to break into this new field. A third trainee had also been attempting to break into the field of education. Several months prior to the program he had received a grant from a local foundation and had written a teacher's manual in environmental education.

Rejection Letters

Each applicant not accepted for the program was sent a personal letter of regret. The MT/ST typewriter was used for this purpose. A copy of the letter is shown in Appendix J. A stronger letter was sent to applicants who made it as far as the testing stage. This is shown in Appendix K.

Program Management Considerations

Stipends

Trainees were paid a living expense stipend of $75 per week plus $15 per week per dependent. This allowance was not subject to taxation. Trainees were asked to sign a simple statement to verify the number of their dependents. This is shown in Appendix L. Dependent was defined according to the Internal Revenue Service standards. Trainees were paid at the end of each two-week period. This was frequent enough to avoid placing a hardship on trainees and not so often as to create excess paperwork for the managers of the program. Regular AIR staff members are also paid every two weeks. On one occasion, a trainee with particular financial difficulties was given an advance on this stipend. Two of the trainees left the program several weeks early in order to accept jobs. On these occasions the stipends were prorated to the day trainees left.

Travel Allowance

Trainees from the Seattle area were given the equivalent of the round trip air fare from Seattle to San Francisco. This allowance was paid regardless of the actual travel mode selected by trainees. Two trainees drove their own cars down so they would have transportation while in the Bay area. The travel allowance was paid in two installments, one when trainees arrived and the other just before they left. One trainee asked for the travel allowance before leaving Seattle. This was arranged.

In order to avoid the possibility that a trainee would accept a travel allowance and then leave the program, trainees were asked to sign a statement before receiving the allowance. The statement obligated a trainee to return a prorated portion of the travel allowance if he left the program for reasons other than health, extreme family hardship, or the acceptance of a job in educational research and development. The statement is shown in Appendix M.

Relocation Assistance for Out-Of-State Trainees

Out-of-State trainees were given assistance in matters of relocation. Motel reservations were arranged so that trainees would have a temporary residence while they searched for apartments. Trainees were given apartment hunting information on availability, average rents, neighborhoods, etc.

General Integration with AIR Staff and Procedures

Procedural and logistical arrangements were made in order to insure complete integration of the trainees with the regular AIR staff. Trainees were assigned desks and space throughout the building in offices with AIR professional staff. This was designed to increase exposure to processes and people in educational R&D. Trainees were also provided telephone service, mail distribution, and access to all office equipment. They had complete use of the AIR library and its special arrangement with the Stanford University libraries. They received regularly routed research newsletters and other materials.

There were some initial management fears that the presence of six naive trainees working throughout AIR might require an inordinate amount of supervisory and explanatory time or generally be disruptive of an ongoing efficient work pattern. These fears did not materialize. Trainees seemed to benefit greatly from the integration without significantly interfering with work patterns.

Another important step to protect morale was the conservative stand administrators took with reference to the possibility of obtaining jobs. Special care was taken to avoid giving the trainees false hopes. In the past some training programs have suffered a serious morale crisis when the unrealistic hopes of the participants were finally dashed by the realities of the job market situation.

Trainee Morale

Trainee morale can have an elusive yet substantial effect on the success of a program. Several steps were taken to keep morale high. Informal group luncheons were held frequently. Trainees were, of course, invited to all company parties. Several dinner parties were held for all the trainees.

Future programs might consider incorporating a small discretionary fund which could be used for several morale building activities. These might be as simple as providing coffee and donuts during the initial orientation meeting.

Unemployment Benefits

Residents from the State of Washington were clearly eligible for unemployment compensation and did indeed receive it. In order to insure eligibility, however, this project director had to write the special services section of the Washington Unemployment Office. It was necessary to describe the training program in detail so that a ruling could be made.

California law on the eligibility of the trainees for unemployment compensation is ambiguous. This was determined through lengthy conversations with administrators at the Palo Alto Unemployment Office, the San Mateo Unemployment Office, and the regional headquarters in San Francisco. A legal interpretation from Sacramento may be necessary. No state ruling or interpretation has yet been made for any program resembling ours. The state law requires that persons receiving unemployment benefits must be "looking for work" and must be "able and available" for work. Trainees in the program did meet the criterion of "looking for work" because the curriculum itself incorporated job hunting information and activities. Trainees were free and indeed encouraged to attend job interviews in the field of educational research and development at any time during the program. In order to meet the "able and available" clause, trainees were officially informed that they could leave the program at any time to take a job. These requirements were thus satisfied. It is the stipend which may void a trainee's eligibility for unemployment insurance.

Since California law is ambiguous, our choice at this point was either to take the case to Sacramento -- a relatively lengthy and expensive process -- or simply wait to see how the local unemployment office would handle the case. Only one California resident was eligible for benefits; the others had exhausted theirs. With this fact in mind, the second alternative was selected. As it turned out, the local office interpretation was that the trainee was eligible, and he was paid. Since the law is ambiguous, however, we cannot predict that trainees in any future program will receive benefits. It is likely that a larger-scale program would result in the local offices themselves asking for a ruling from Sacramento. There is no way to predict what this ruling would be.

CHAPTER 4

JOB PLACEMENT ACTIVITIES

In the latter half of the program increasing emphasis was placed on locating openings and applying for jobs. This chapter will review those activities.

One of the first tasks was the rewriting of resumes to reflect skills and experience relevant to educational R&D. Trainees all had such skills yet this was not easily determined. In general, engineers do not know enough about educational R&D to identify relevant skills themselves. Similarly, educational researchers do not know enough about the various fields of engineering to make the identification. This program helped bridge the gap. In their resumes, trainees emphasized their skills in report writing, proposal writing, scheduling, data analysis and presentation, evaluation procedures, administrative systems, and technical writing. Frequently, a trainee's experience seemed irrelevant when explained in engineering terms, but very relevant when described in the language of educational R&D. The relationship between engineering and educational R&D is being further studied by the National Society for Professional Engineers which has been given a Department of Labor contract to survey employment areas to which engineers may transfer. AIR has been involved in the educational R&D component of the study.

Several seminars were held in which job hunting strategies were planned. The seminars included both structured discussion of pre-planned ideas and brainstorming by trainees and staff.

Four of the six trainees are currently employed. Two are still looking for jobs. These results will be discussed in a later section of this chapter. First, the job hunting strategies will be described.

Job Search Strategies

Five basic strategies were followed in searching for jobs.

1) An attempt was made to take full advantage of contacts developed at AIR. Attention was given both to potential jobs at AIR itself, and jobs in other organizations in which AIR staff members might have contacts. All program

directors at AIR were alerted to the fact that trainees were looking for jobs. Informal meetings with program directors and other staff members were used to explore possibilities.

One trainee's apprenticeship lead to contacts both in and outside of AIR which resulted in a job. Because of his work on the employer-based career education contract, he met an official from Far West Laboratory who asked him to submit a resume and then later hired him.

In another example, an AIR staff member who had lived and worked in the Pacific Northwest met with the Seattle trainees to suggest possible courses of action in that area. Discussion focused on individuals who might be contacted and organizations with potential openings, such as an expanding community college system.

Potential job contacts were also established during the professional conference on Career Education and Development hosted by AIR. During the conference the cross-training program was described, the trainees' skills and background summarized, and the availability of the trainees for employment noted. Trainees also had the opportunity to engage in casual discussions with various professionals in the field, many of whom were potential employers. The conference did result in further job exploration.

Several trainees with expertise in specific areas were included in proposals submitted by AIR. This strategy added still another possibility for a job.

Employment inquiry letters were sent to many AIR contacts in other R&D organizations. Written by the project director, the letters described the cross-training program and the background of the trainees. An example of a letter is shown in Appendix N. Resumes of appropriate trainees were included with each letter.

Appendix O contains a list of the organizations to which employment inquiries were made. This list includes inquiries made by AIR staff members on behalf of the trainees and inquiries made by trainees themselves.

2) Trainees and staff members remained alert to all important new contracts awarded in the field of educational R&D. Resumes were submitted to organizations which received such contracts. A number of procedures were followed to locate the new contracts. The AIR confidential newsletter lists the recipients of contracts on which AIR has bid. This was one source of information. The newsletter was circulated to all trainees. Several other newsletters, such as Behavior Today and Review of Educational Research, also announce newly awarded grants and contracts. The business section of newspapers frequently carries articles on companies which receive large contracts.

This approach was followed in a number of cases. When the Office of Education awarded three proposal writing grants relating to the voucher system, one trainee with expertise in this area submitted his resume to all three organizations. In another case, an article in the business section of the local

paper described a contract awarded to a private company to train people to use the computer. One trainee applied to this company.

3) Trainees were strongly encouraged to rethink their own personal contacts in the light of their new profession. A trainee, for example, might have a brother-in-law who works at an educational R&D organization. Trainees do not necessarily think of these contacts without some prodding. They may overlook important personal contacts simply because they are not yet accustomed to thinking of themselves as educational researchers.

4) Trainees were encouraged to explore the standard methods of locating jobs in educational R&D. The APA Employment Bulletin was examined each month; the Educational Researcher employment ads were read; civil services employment was was explored. It should be noted that most of the jobs listed in the APA Employment Bulletin were academic positions. Few related to research and development. Civil service employment did offer some potential. Several trainees attended interviews for civil service jobs both in California and other states.

5) After all contacts, contract leads, etc. were explored, trainees sent their resumes to all the remaining R&D organizations which interested them. The Far West survey of R&D employers in the San Francisco Bay area, discussed in the introduction to this report, served as a valuable aid in this strategy. Trainees used the raw data from the survey to select R&D organizations which predicted they would need B.A. and M.A. level personnel during the coming year. As previously mentioned, Appendix O contains a list of all organizations to which employment inquiries were made wither by AIR staff members or trainees themselves.

Relevant Federal Programs

Federal Programs

A number of federal programs were available to assist engineers, scientists, and technicians locate and begin work in new jobs. These programs were investigated and used whnever possible.

One provision of a federal program provides a reimbursement for employers when they higher someone not fully trained for the position. To qualify for the reimbursement, the employer must pay a salary of at least $8,000 per year. He can be reimbursed up to $2,000, the total depending upon how much training is

required. The total is negotiated between the employer and the state unemployment agency which administers the federal funds. Negotiation can take place on a contingency basis, that is, before a firm employment offer is made or accepted. The program also provides funds for the employee to travel to the location of his new job.

Whenever appropriate, the above program was explained to potential employers. It added one more attractive element to the hiring of the trainees.

Probably the most useful provision of a federal program was one which provides funds for unemployed engineers, scientists, or technicians to travel for job interviews. Up to $500 per applicant is available. One trainee used these funds to travel to Minnesota and Wisconsin where he had interviews for civil service jobs with both states' departments of education.

Results

Out of the six trainees, one was rehired for his previous position at the Boeing Company, three got jobs in educational research and development, and two are still looking for jobs.

The three jobs in educational R&D may be described as follows. One is a part time job at American Institutes for Research. This trainee will work toward a Masters degree in psychology at the same time. Another is a research analyst at DeAnza Community College. The task calls for the analysis of the college's various educational programs in order to determine their relevance, and cost-benefit to the community. The salary lies in the $12,00-$13,000 range. It should be noted that before taking the DeAnza job this trainee also worked temporarily at Far West Laboratory. A permanent job at the laboratory was contingent upon receiving certain funds, and although this was probable, it was not certain.

A third trainee is now coordinator of the Work Experience Program at Gavilan College in Gilroy, California. The program allows students to receive credit for specified work performed outside of the college.

The fact that trainees were able to secure these positions in the field of education at a time and place in which the job market is particularly tight demonstrates one important aspect of the model--graduates of the cross-training program are acceptable to potential employers. The ultimate test of the model, of course, will be the effectiveness of the graduates in their new positions.

CHAPTER 5

CONCLUDING COMMENTS

This project has dealt with the development of an apprenticeship work-study model. A separate companion project evaluates the operational feasibility of the model. In-depth conclusions regarding potential effectiveness and feasibility are contained in that project report. Please see Melnotte, J. M., Millstein, E. M., and Dunn, J. A., A Study of the Operational Feasibility of the Apprenticeship Work-Study Program for Multi-site Tryout and Evaluation (Grant No. OEG-0-71-4711). The evaluation focuses on the feasibility of a larger scale program, the confirmation or improvement of specific components of the model, and the identification of effective evaluation procedures and instruments which could be applied to a future large-scale field test. The basic questions investigated include: 1) How effective is the program in terms of knowledge and skills gained? 2) How generalizable or exportable is the model? 3) What is the trainee reaction to the program experience? 4) What should be the content and procedures for follow-up? 5) What are the constraints on and advantages for the institution conducting the training program? 6) What applications of the training model are feasible?

The need for quality personnel in the field of educational research and development during the coming years will be critical. The training model developed in this project offers one method for helping to meet this need. It may be employed to improve the skills of those already working in the field, or to train new people for the field.

Individualization is a significant aspect of the training model. It permits special attention to be given to the particular skills each trainee wants to develop. It makes possible rapid, short-term instruction. Trainees do not spend long hours in classrooms studying materials which are of questionable use to their own career objectives. They study materials which have been selected as particularly relevant to their needs. They work at their own pace with professional supervision.

The apprenticeship is another significant component of the model. It offers the potential of very efficient learning. Irrelevant knowledge is not dwelled upon while relevant skills and knowledge are reinforced frequently. It provides the trainee with a real world framework by which to guide his own career pursuits. It may help him to identify and refine his own learning objectives. Finally, it may increase the trainee's credibility with potential employers and provide him with important professional contacts.

The model is likely to appeal to employers. In addition to being effective and to satisfying the students, a requirement of success is that the model satisfy the employer. This is not a simple task. Training models can interfere with the operation or cost structure of an R&D organization. An internship model, for example, in which an employer is required to pay an intern

and also give him structured training is not likely to be well accepted by employers. Such a model puts a double burden on the employer. He must pay for valuable supervisor time in training the intern and he must pay the intern. The apprenticeship model on the other hand is likely to be of maximum appeal to employers and is, therefore, more likely to be accepted. The employer does provide valuable supervision for the trainee, but in return he receives the trainee's free labor. He is also provided with an inexpensive method for trying out prospective new employees. In general the pilot test of this model has suggested that the integration of the trainees with the regular staff presents no problem for employers.

The model is exportable. This is hypothesized because the training does not rest on factors unique to AIR. The model can easily be recreated at other educational research and development organizations. The prime requirements are that the host organization have (1) a moderately large number of educational R&D professionals, perhaps five per trainee, (2) a large number of R&D projects, and (3) a library or easy access to a library. Procedures for duplicating this training program are carefully detailed in a manual which accompanies this report. Please see Millstein, E. J., Melnotte, J. M., and Dunn, J. A., Procedures for Conducting an Apprenticeship Work-Study Program. Much of the information contained in the manual is also contained in this final report; however, the manual focuses on how to conduct a future program, while this report has concentrated on what happened in the pilot program. The manual is divided into four major sections: (1) an over-view of the model, (2) procedures on how to conduct the instructional system including descriptions of the curriculum, individualization, and the apprenticeship, (3) procedures for trainee recruitment, selection, and general program management. and (4) procedures for assisting the trainees in finding jobs.

The model is very useful. It provides B.A. and M.A. level personnel trained in applied educational research and development. This is in contrast to the majority of training programs which generally provide Ph.D. level personnel trained only in pure research.

The training model has numerous applications. It can serve as an independent training program much in the way it was employed in this pilot project. In such an application, no connection with a college or university exists. The target population depends on current needs in the field. The program may be used to bring new personnel into the field through cross-training, or to raise the skills of those already working in the field.

The training model may also serve as an adjunct to a regular academic program. In this context the student spends part of his time in academic work at a college or university and part of his time as an apprentice working on actual projects at an educational R&D organization. The model is appropriate for both professional and paraprofessional levels.

The model may also be useful for in-service training. In this application the training takes place entirely at an R&D organization and is designed for selected employees. It can be used both for the upgrading and improvement

of current employees and for the training of new employees. This is potentially of great use to both profit and non-profit R&D organizations, and to NIE.

The present project has been viewed as step 1 in a developmental effort. The model has been developed and its operational feasibility tested. The next step should be a multi-site field test of the utility and effectiveness of the model.

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Note: References to the training materials used in the program itself are shown in Appendix D. They are not listed here.

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APPENDIX A

INSTRUCTIONAL OBJECTIVES

Objectives	Could do before program	Acquired during program	Can't do	If can do: Degree of Expertise: Slight	Moderate	Strong	Skills you would like to emphasize in balance of program
Library Skills							
Can describe the organization of a card catalogue and locate entries regarding: a. author-title b. subject c. documents d. pamphlets e. tests	☐	☐	☐	☐	☐	☐	☐
State the general structure and types of information given in sources particularly associated with education: a. Education Index b. Psychological Abstracts c. Encyclopedia of Educational Research d. Dissertation Abstracts e. Relevant ed. sections of Guide to Periodical Literature	☐	☐	☐	☐	☐	☐	☐
Describe the types of information available and be able to locate and obtain dicuments and information from the DATRIX and ALERT systems.	☐	☐	☐	☐	☐	☐	☐
State the function and organization of the ERIC system.	☐	☐	☐	☐	☐	☐	☐
Describe the types of information stored in the ERIC system, the various reference tools used, and the forms in which ERIC documents are supplied.	☐	☐	☐	☐	☐	☐	☐
Explain the procedure for ordering hard copy and microfiche copies from ERIC.	☐	☐	☐	☐	☐	☐	☐
State the content and structure and locate and interpret entries in the ERIC reference tools of Research in Education and Current Index to Journals in Education.	☐	☐	☐	☐	☐	☐	☐
State the function and organization, interpret, and use the Thesaurus of ERIC Descriptors.	☐	☐	☐	☐	☐	☐	☐

Objectives	Could do before program	Acquired during program	Can't do	If can do: Degree of Expertise: Slight	Moderate	Strong	Skills you would like to emphasize in balance of program
Library Skills (cont.)							
Describe the function of and state the general procedure for retrieving information through the ERIC DIALOG system.							
Can locate and use special equipment and devices typically found in libraries, such as microfilm readers.							
Prepare a statement of purpose of a survey of the literature related to a given topic or problem in education.							
States descriptors or key words to guide the search.							
Prepares a detailed search strategy.							
Retrieves bibliographic entries and documents and prepares bibliographic cards according to a standard format.							
Can scan and screen retrieved documents for relevance.							
Prepares abstracts or annotated bibliography of relevant documents covering brief statements of problem, sample, method, findings, discussion.							
Classifies, indexes, and organizes bibliography cards and abstracts with such as McBee sort cards.							
Instrumentation							
Describe, state the functions of, and discuss the advantages and disadvantages (where applicable) of equipment with application in education. (eg. programmed learning machines, student response systems equipment in area of teaching/learning; equipment commonly used in experimental situations, atuomated assessment equipment).							

Objectives	Could do before program	Acquired during program	Can't do	If can do: Degree of Expertise: Slight	Moderate	Strong	Skills you would like to emphasize in balance of program
Instrumentation (cont.)							
Be able to locate sources of hardware							
Name and describe the common types of data gathering and assessment instruments, eg. questionnaire, essay, interview schedule, critical incident instruments, and the various types of objective tests--multiple choice, true-false, short answer, matching, etc.							
State the purpose (or common applicability of), advantages and disadvantages of various types of instrumentation							
Discuss the guidelines for quality commonly associated with various types of instruments (as to presentation and layout).							
Summarize the basic statistical concepts associated with tests such as reliability, validity, item sampling, correction for guessing, measurement error, item analysis, etc.							
State the general principles in writing objective test items such as appropriateness of content and difficulty, brevity, accuracy, single answer, grammatical correctness, positive wording, absence of dependent cues, etc.							
Discuss a general strategy for planning and developing assessment and informational instruments.							
Describe general content and structure of a variety of commonly used instruments, eg. Stanford-Binet, MMPI, etc.							
Be able to locate or obtain specimen sets of tests through libraries or companies.							

Objectives	Could do before program	Acquired during program	Can't do	If can do: Degree of Expertise: Slight	Moderate	Strong	Skills you would like to emphasize in balance of program
Data Collection							
Can describe the general nature of a variety of interviewing techniques (eg. structured, focused, etc.)	☐	☐	☐	☐	☐	☐	☐
Can plan and develop interview schedules which represent various interview techniques.	☐	☐	☐	☐	☐	☐	☐
Given specific R&D problems, discuss the application, advantages, and disadvantages of various interview techniques.	☐	☐	☐	☐	☐	☐	☐
Can apply appropriate interview techniques in conducting interviews of the types likely to be used in R&D projects.	☐	☐	☐	☐	☐	☐	☐
Can describe the general nature of a variety of observation techniques (eg. time sampling, anecdotal record, etc.).	☐	☐	☐	☐	☐	☐	☐
Can plan and develop observation schedules which represent various observation techniques.	☐	☐	☐	☐	☐	☐	☐
Given specific R&D problems, discuss the application, advantages, and disadvantages of various observation techniques.	☐	☐	☐	☐	☐	☐	☐
Can apply appropriate observation technicues in conducting observations of the types likely to be used in R&D projects.	☐	☐	☐	☐	☐	☐	☐
Summarizes the basic principles associated with standardization (eg. commonness of directions, timing, etc.)	☐	☐	☐	☐	☐	☐	☐
Explains why standardization is important and can identify those assessment situations with which it is most likely to be associated or not particularly associated.	☐	☐	☐	☐	☐	☐	☐

Objectives	Could do before program	Acquired during program	Can't do	If can do: Degree of Expertise: Slight	Moderate	Strong	Skills you would like to emphasize in balance of program
Data Collection (cont.)							
Identify the ranges of expertise and training required to administer various types of tests under certain conditions such as group, individual, children, etc.							
Identify common problems for which specific types of tests are used to collect data.							
Identify the conditions under which various tests are commonly given.							
Discuss how certain external conditions may affect administration or outcomes.							
Differentiate "instrument administration" from "testing," as it is commonly used (general clarity of all those definitions)							
Discuss the issues of protection of subjects in experimentation, confidentiality of data, subject awareness of a test situation, etc.							
Explain how affective considerations, such a rapport, might influence testing process and results.							
Given an experiment, discuss the kinds of measurements which would be appropriate for data collection.							
Define the major and common terms associated with experimentation, such as "research design," "dependent and independent variables," "control groups," "hypotheses," "random sampling," "significance,""confounding," and "intervening variables," etc.							
Identify some of the common areas of education in which basic research occurs.							
Discuss the role of basic experimentation in educational R&D.							

Objectives	Could do before program	Acquired during program	Can't do	If can do: Degree of Expertise: Slight	Moderate	Strong	Skills you would like to emphasize in balance of program
Data Analysis							
State the characteristics of and give examples of data that are based on nominal, ordinal, interval, and ratio scales.							
Describe procedures for organizing data such as tallying frequencies or ratings, alphabetizing, rank ordering, etc.							
Given specific types of data, prepare an organizational format.							
Identify various types of data displays such as pie charts, bar graphs, histograms, etc.							
State general guidelines for the preparation and construction of visual data presentations.							
Given an organizational format containing specific types of data, prepare a visual display such as chart, graph, etc.							
Compare and contrast the amounts and kinds of information provided by different data displays.							
Define basic statistical terms such as normal distribution, standard scores, measures of central tendency and dispersion, norms, derived scores, confidence interval, Type I and Type II error, significance, etc.							
Compute dommon statistics such as mean, standard deviation, t's, etc.							
State what questions various tests of significance address themselves to.							

Objectives	Could do before program	Acquired during program	Can't do	If can do: Degree of Expertise: Slight	Moderate	Strong	Skills you would like to emphasize in balance of program
Proposal Preparation							
Plan research studies using defensible statistical techniques and research designs.							
Be familiar with basic concepts of research design (eg. random sampling, pre- and post-testing, control groups, etc.).							
Identify a variety of funding sources and describe the kinds of R&D efforts typically funded by each (whether RFP or unsolicited or both; what special areas of interest, eg. voc. ed., etc.)							
Estimate the number of manhours needed to complete specified tasks.							
Prepare statements describing agency facilities and personnel relevant to the project proposed.							
Define, and describe the distinctions between, the following terms: proposal prospectus, bid, RFP, letter of interest.							
Given an RFP, identify the topics which must be covered in the proposal according to the specifications.							
Write a clear statement of the problem your proposed project is addressing.							
State the objectives and anticipated products of a proposed project.							
Given a project, identify the kinds and sources of data to be collected and specify appropriate methods for collecting the data.							
Product Development							
Design, produce, and validate effective instructional materials							

Objectives	Could do before program	Acquired during program	Can't do	If can do: Degree of Expertise: Slight	Moderate	Strong	Skills you would like to emphasize in balance of program
Product Development (cont.)							
Identify sources of information on available materials.							
Review and examine existing products for relevance to current product effort.							
Identify elements of the current product effort which will need to be 1) adopted, 2) adapted or modified, and 3) developed or dreated.							
Specify the objectives of the product.							
Make constructive recommendations for changes in the product based on field test data.							
Identify sources of information regarding the content of the product.							
Prepare detailed specifications regarding product development or modification							
Know procedures for ordering/obtaining materials to be adopted/adapted.							
Know when copyright or patent releases need to be obtained and how to obtain them.							
Identify characteristics of product users which will have implications for product development (eg. reading level, etc.)							
Establish quality-control procedures.							
Identify sources of assistance in activities your agency is not qualified to carry out (eg. printing, photography etc.)							

Objectives	Could do before program	Acquired during program	Can't do	If can do: Degree of Expertise: Slight	Moderate	Strong	Skills you would like to emphasize in balance of program
Evaluation							
Understand distinctions between formative and summative evaluation.							
Understand common planning and evaluation approaches such as PERT, PPBS, CIPP, etc.							
Given a set of objectives, identify appropriate methods or techniques for assessing whether or not the objectives have been met (eg. observation, interview, test, unobtrusive measures, affective measures, etc.)							
Identify examples of "unobtrusive measures."							
Understand the meaning of such concepts as: confounding variable, intervening variable, error of measurement, sampling error.							
Prepare a detailed plan for field testing a product.							
Identify the kinds of information to be gathered in a field test.							
Identify objectives of a product if not previously specified.							
Be familiar with basic design concepts.							
Specify conditions under which evaluation data should be collected.							
Identify necessary arrangements to be made in carrying out evaluation plan.							
Prepare report of product evaluation effort, including analysis and interpretation of data collected.							

Objectives	Could do before program	Acquired during program	Can't do	If can do: Degree of Expertise: Slight	Moderate	Strong	Skills you would like to emphasize in balance of program
Evaluation (cont.)							
Specify procedures for analyzing the data.							
Perform item analyzes of evaluation measures/instruments.							
Specify revisions to be made in evaluation plan/instruments based on their initial use.							
Marketing, Dissemination, Implementation							
Given a variety of products, identify appropriate marketing outlets/dissemination modes for each.							
Identify the target audience to be reached.							
Given a variety of target audiences, identify appropriate marketing outlet/ dissemination modes for each.							
Identify various methods of "advertising" a product: eg. news releases, newsletter, journal articles, ads, demonstrations, mailings, APA, AERA, etc.							
Know when and how to get copyrights or patents.							
Develop simple market test plans.							
Outline variables to be considered to determine if product is ready for implementation (eg. necessary instructions for use developed, packaging specifications prepared, etc.).							
Identify materials/information necessary to conduct marketing campaign.							
Identify characteristics of target audience to be considered in preparing specifications.							

Objectives	Could do before program	Acquired during program	Can't do	If can do: Degree of Expertise: Slight	Moderate	Strong	Skills you would like to emphasize in balance of program
Marketing, Dissemination, Implementation (cont.)							
Specify procedures for assessing effectiveness of marketing, implementation effort.	☐	☐	☐	☐	☐	☐	☐
Write-Up and Publication							
Prepare abstract of project report.	☐	☐	☐	☐	☐	☐	☐
Be familiar with APA manual on style.	☐	☐	☐	☐	☐	☐	☐
Write succinct descriptions of the purpose, method, results, and implications of a project.	☐	☐	☐	☐	☐	☐	☐
Given a variety of specific paper topics, identify a) appropriate publication sources, and b) appropriate oral presentation forums for each.	☐	☐	☐	☐	☐	☐	☐
Given a draft of an article or a report, review and critique it for 1) content, 2) style, and 3) technical soundness.	☐	☐	☐	☐	☐	☐	☐
Scheduling/Management							
Estimate number of man hours necessary to complete specified tasks.	☐	☐	☐	☐	☐	☐	☐
Estimate costs associated with completing specified tasks.	☐	☐	☐	☐	☐	☐	☐
Write detailed job description for (assumed) vacancy.	☐	☐	☐	☐	☐	☐	☐
Interview candidate for job position.	☐	☐	☐	☐	☐	☐	☐
Outline methods for planning, monitoring, and evaluating accomplishment of tasks.	☐	☐	☐	☐	☐	☐	☐
Identify work objectives	☐	☐	☐	☐	☐	☐	☐

Objectives	Could do before program	Acquired during program	Can't do	If can do: Degree of Expertise: Slight	Moderate	Strong	Skills you would like to emphasize in balance of program
Scheduling/Management (cont.)							
Prepare progress reports.							
Set up systems for documenting project progress.							
Apprenticeship Experiences							
To know and be able to access appropriate knowledge and information sources.							
To organize and manage data collection procedures.							
To assist in the codification, analysis, and presentation of data and information.							
To design and specify the requisite tasks for an area of materials development.							
To organize, coordinate, and manage the production of developmental materials.							
To make substantive content or idea input to materials development.							
To develop, under supervision, draft materials.							
To be a constructive partner in the review of RFP's, and the development of proposals. This requires familiarity with Federal sources and processes, and familiarity with such documents as the Commerce-Business Daily.							
Exhibit reliability and dependability in finishing an assigned or assumed task when it is needed.							
Be thorough in the collection, investigation, and presentation of data and other types of information, such as literature reviews.							

Objectives	Could do before program	Acquired during program	Can't do	If can do: Degree of Expertise: Slight	Moderate	Strong	Skills you would like to emphasize in balance of program
Apprenticeship Experiences (cont.)							
Assume responsibility for, and take seriously, the adequate completion of a task.							
Be sensitive to and compatible with the surrounding work style, customs, and environment.							

APPENDIX B

GROUP ACTIVITIES AND ASSIGNMENTS

Note: The program was structured to include many group activities in the first half of the program and few in the second half. By the second half of the program trainees had a clear picture of their own objectives and were heavily involved in individual study and apprenticeship work.

Week of September 12

Wednesday - First day of program

A.M. - Informal introductions, coffee and donuts

Lecture - seminar conducted by Melnotte and Millstein.
Introduction and overview of the program
Overview of educational research and development in general
Tour of AIR plant and facilities
Lecture - seminar (Melnotte)
An overview of all educational R&D projects AIR is currently working on.

P.M. - Group Luncheon

Lecture - seminar (J. Dunn)
AIR in the broader context of educational R&D
Lecture - seminar (D. Tiedeman)
Formal welcome to the program.
Discussion of AIR's objectives and future role in R&D.

Thursday - September 16

A.M. - Lecture - seminar (Melnotte)
Completion of overview of educational R&D projects AIR is currently involved in.
Assignment of office space.

P.M. - Informal group luncheon

Presentation of kinds of apprenticeship positions available (Millstein). Trainees provided reading materials describing contracts on which apprenticeship positions are available. Trainees begin thinking about what kinds of projects they are interested in working on. They have several weeks before decisions need be made, however.

Friday September 17

Topic - in-depth analysis of the kinds of skills involved in educational R&D. Project PLAN taken as a comprehensive example.

A.M. - Film on Project PLAN

Individual study of several articles on Project PLAN.
Flanagan, J. C., How Instructional Systems Will Manage Learning.
Flanagan, J. C., The Role of the Computer in Project PLAN.
Dunn, J. A., The Accommodation of Individual Differences in the Development of Personal Programs of Study.

P.M. - Lecture - seminar (J. Dunn)
On the kinds of skills required in a comprehensive educational R&D project such as PLAN.

Week of September 19

Note: On days when there are no formal group activities, trainees are involved in individual study of both general and individual assignments.

Monday - September 20

P.M. - Lecture - seminar (L. Steel)
The DDE project - a project designed to create instructional materials to train personnel for educational development, dissemination, and evaluation.
Overview of the modules trainees will study.
Assignment - Module 2-2-4, Data Analysis.
Module 2-2-3, Data Management.
Dual purpose of assignment:
1) to learn the content of the modules
2) to test and make contribution toward revision and improvement of the module.

Friday - September 24

A.M. - Lecture - seminar (J. Dunn)
Data collection with young children.
Short film of a child working on a block-sort task.
Optional assignment - Dunn, J., The OST: Theory, Instrument, and Norms.

Week of September 26

Sunday - September 26

P.M. - Informal dinner for trainees and staff at project director's house.

Monday - September 27

Topic - Behavioral objectives

A.M. - Assignment - Read Mager, R., Preparing Instructional Objectives.
Write three properly formed behavioral objectives.
Critically analyze 10 project PLAN behavioral objectives

P.M. - Seminar discussion (Millstein)
Behavioral objectives.

Wednesday - September 29

Topic - Programmed Instruction

A.M. - Film: Markle, D., Programmed Instruction, The Development Process.
Assignment - Markle, S., Good Frames and Bad.

Thursday - September 30

P.M. - Seminar (Millstein)
Programmed Instruction.

Friday - October 1

Topic - Computer-assisted instruction (C.A.I.)

A.M. - Field trip to the Brentwood School - an elementary school in a black neighborhood with sophisticated C.A.I. system. Included round-table discussion with the principal and three teachers and a tour of the C.A.I. system while in use.

P.M. - Informal group luncheon

Lecture - seminar (Millstein)
C.A.I.

Week of October 3

Monday - October 4

Topic - Incentives and Accountability

A.M. - Assignment - Read Jung, S.M.; Lipe, D.; and Wolfe, P.S. Study of the Use of Incentives in Education and the Feasibility of Field Experiments in School Systems.

P.M. - Lecture - seminar (S. Jung)
Incentives and accountability.

Tuesday - October 5

A.M. - Assignment - Preparation for attendance at professional conference to be held at AIR on Thursday and Friday. Read Computer Based Vocational Guidance Systems. Summary of papers presented at the Fourth Symposium for systems under development for vocational guidance.

Thursday - October 7 and
Friday - October 8

Trainees attended the Eighth Invitational Conference on Systems Under Construction for Career Education and Development. Papers at the conference included :

1) models for career education and
2) reports on status and progress of various guidance systems.

Week of October 10

Monday - October 11

A.M. - Film: Harris, J., Project CVIS
Seminar (Millstein)
Trainee reactions, comments, etc. on the Career Education and Development Conference.

Tuesday - October 12

P.M. - Lecture - seminar (D. Lipe)
Behavior Modification
Assignment - Read Holland, J. and Skinner, B.F. - The Experimental Analysis of Behavior.

Week of October 17

Sunday - October 17

P.M. - Meeting at one of the trainee's houses to watch Skinner on educational television.
Discussion followed the program.

Tuesday - October 19

P.M. - Seminar - discussion (M. Ausloos)
Conducted by one of the trainees on the proposal evaluation procedures for small grants from OE. This trainee had attended a proposal evaluation meeting for the Western states.

Week of October 24

Entire week spent in individual activities. No group activities.

Week of October 31

Tuesday - November 2

Field trip to Educational Testing Service in Berkeley. Round table discussion with ETS staff members. Tour of facilities.

Week of November 7

Wednesday - November 10

A.M. - Discussion and workshop by trainees on how to revise and improve Data Management, one of the modules being developed for the Far West Consortium for DD&E Training.

Thursday - November 11

P.M. - Discussion on how to rewrite resumes to reflect skills and experience relevant to educational R&D.

Week of November 14

Wednesday - November 17

P.M. - Seminar discussion on job hunting strategies.

Friday - November 19

P.M. - Informal dinner party at the home of one of the trainees.

Week of November 21

Monday - November 22

A.M. - Trainees from the Seattle area met with an AIR staff member from the Pacific Northwest to discuss job possibilities in that area.

Week of November 28

No group activities. Trainees involved in independent study, apprenticeship tasks, and independent study.

Period of December 5 - 15

Wednesday - December 8

A.M. - Second group discussion on job hunting strategies.

Monday - December 13

A.M. - Examination

APPENDIX C

INDIVIDUAL ACTIVITIES OF TRAINEES

Trainee - M. Ausloos

September 15 - September 24

Met with various professionals at AIR (R. Weisgerber, E. Norris) to discuss environmental education.
Met with J. Dunn to discuss the format for writing a proposal.
Arranged and attended meetings at the Hancock Foundation, Sunnyvale and San Jose school districts and DeAnza Community College in order to plan a proposal on environmental education.
Began writing proposal on environmental education to be submitted by DeAnza College to the Hancock Foundation. Is serving his apprenticeship at DeAnza College.

Week of September 26

Home sick with the flu.

Week of October 3

Continued writing proposal on environmental education to be submitted to the Hancock Foundation.
Read parts of the symposium on Computer-based Vocational Guidance Systems.

Week of October 10

Arranged and attended meetings at Brentwood school, Stanford, and DeAnza to discuss computer assisted instruction and environmental education.
Attended and observed the proceedings of the U.S. Office of Education, Region 9, small grants review panel in Reno, Nevada.
Read Mager, R., Preparing Instructional Objectives.
Reviewed: Annual register of grant support 1970.
The Foundation Directory. 3rd. ed.

Week of October 17

Completed writing proposal on environmental education.
Arranged written endorsements of proposal by local school districts.
Assigned office space in DeAnza College where he is serving his apprenticeship. Began research for his supervisor there on the evaluation of educational administrators.
Presented a lecture - seminar to other trainees on the small grants review panel procedures witnessed at the meeting in Reno.

Read: Flanagan, J.C. & Miller, R.B., Introducing the performance record program; the critical incident method for employee appraisal and development.
Fleishman, E.A., ed. Studies in personnel and industrial psychology.

Week of October 24 - 30

Continued research and review of the literature for DeAnza College on the evaluation of educational administrators.
Read about Flanagan's critical incident method for possible application to this issue.
Checked on final procedures for submitting environmental educati[illegible] proposal to the Hancock Foundation.
Attended a [illegible]eeting on job opportunities under the Emergency Employm[illegible] Act.

Week of October 31 - November 6

Continued work on his apprenticeship at DeAnza College. Tasks included the following: 1) Reviewed the DeAnza economic model. The model is intended to offer an analytical approach to the most economic number of students to plan for in each of the announced classes. 2) Reviewed a California bill which may enable DeAnza to offer a new series of courses in nursing. 3) Attended an Office of Education meeting in San Francisco. The purpose of the meeting was to explain the administration of funding for environmental education. Briefed DeAnza officials on the meeting. 5) Attended a meeting relating to the availability of Emergency Employment Act funds for DeAnza College.

Week of November 7 - 13

Participated in an environmental conference related to his interest in environmental education.
Continued work on apprenticeship at DeAnza college.
Read the Hawaii English Program
Attended two job interviews.

Week of November 14 - 20

Continued work on apprenticeship at DeAnza College. Conducted research into an evaluation model for the DeAnza Mini College Program.

Week of November 21 - 27

Continued work on apprenticeship at DeAnza.

Week of November 28 - December 4

Travelled to Wisconsin and South Dakota for job interviews. Both were with the State Department of Public Instruction.

Period of December 5 - 15

Completed apprenticeship task at DeAnza Community College. Has taken a job as Coordinator of the Work Experience Program at Gavilon Community College.

Trainee - B. Berger

September 15 - September 24

Read: Background materials on the Oak Grove Project. A number of sociological studies which serve as examples of problems which could be investigated using the Talent Data Bank. Studies included:

Pavalko, R.M., "Recruitment to Teaching: Patterns of Selection and Retention"

Sewell, H. and Shah, P., "Parents Education and Children's Educational Aspirations and Achievements"

Sewell, W. H., Haller, A.O., and Portes, A., "The Educational and Early Occupational Attainment Process"

Sewell, W.H., "Essay Review: The Social Context of Ambition"

Pavalko, R.M., "Aspirants to Teaching: Some Differences Between High School Senior Boys and Girls Planning on a Career in Teaching"

Sewell, W.H., Armer, J.M., and Shah, V.P., "On Neighborhood Context and College Plans (1), (II), and (III) and Reply to Turner, Michael and Boyle"

Sewell, W.H. and Armer, J.M., "Neighborhood Context and College Plans"

Coleman, J.S., Campbell, Hobson, McPartland, Mood, Weinfeld, York, "Equality of Educational Opportunity"

DDE module on Data Analysis
Huff, D., How to Lie With Statistics
Silberman, Crisis in the Classroom

Week of September 26

Read: Mager, R., Preparing Instructional Objectives
Dillman, F., Instructional Objectives: Specificity and Behavior
Markle, D., Good Frames and Bad
Continued studying Data Analysis Module.

Week of October 3

Read: Jung, S.M., Lipe, D., and Wolfe, P.S., Study of the Use of Incentives in Education and The Feasibility of Field Experiments in School Systems.
Education Turnkey System, Performance Contracting in Education.
Symposium on Computer-based Vocational Guidance Systems.

Week of October 10

Read: Crawford, J. et.al., Selection and Description of Educational Products for a Study of the Development and Impact of Such Products.
Jung, S.M., et.al., Product Development Report: First Year Communication Skills Program.
Read in preparation for work on this project in the coming weeks.
Holland, J. and Skinner, B.F. The Analysis of Behavior.
Education for the Urban Disadvantages from Preschool to Employment.
Lessinger Every Kid a Winner: Accountability in Education.
Began working on an AIR project designed to examine the process of development of successful educational products. She is analyzing and summarizing material on the development of the Distar System.

Week of October 17 - 23

Read: Chapters 1-17 of Holland, J. and Skinner, B., The Analysis of Behavior
Chapters 1-7 of Skinner, B.F., Science and Human Behavior.
Began The Urban Institute's Federal Evaluation Policy: Analyzing the Effects of Public Programs
Continued work on AIR project to examine the process of development of successful educational products
Completed Data Analysis module test.

Week of October 24 - 30

Continued work on AIR project to examine the process of development of successful educational products.
Read: Oettinger, A., Run Computer, Run.
Continued reading: Skinner, B.F., Science and Human Behavior.
Met with two other trainees to discuss improvements of the Data Analysis module.

Week of October 31 - November 6

Continued work on AIR project to examine the process of development of successful educational products. Began work on an external apprenticeship at Foothill Community College District. Met with officials including the director of business services. Will work on the five year financial plan, particularly student enrollment predictions.
Read: Fleishman, A. A Study in Human Communication. Scientific Activities of Independent Non-profit Research Institutions, 1970.

Week of November 7 - 13

Continued work on Community College apprenticeship--Five Year Plan
Continued work on AIR project to examine the process of development of successful educational products.
Read: Federal evaluation policy--analyzing the effects of public programs, 1970.
Continued reading: Skinner, B.F. Science and Human Behavior.

Week of November 14 - 20

Continued work on the two apprenticeship tasks. See above.
Read: Gilmore, J.S., Ryan, J.J., Gould, W.S. Defense Systems Resources in the Civil Sector: An Evolving Approach, An Uncertain Market.
Wood, D.A. Test Construction: Development and Interpretation of Achievement Tests.
Revised resume.

Week of November 21 - 27

Began writing her report for AIR project to examine the process of development of successful educational products. Met with staff members working on this project.
Met with staff member Jack Crawford to discuss job leads in the Pacific Northwest.
Read: Cronbach, L.J. Essentials of Psychological Testing.

Week of November 28 - December 4

Continued writing her report for AIR project to examine the process of development of successful educational products. Met with all staff members working on this project.

Period of December 5 - 15

Completed work on both apprenticeship tasks. Submitted reports.

Trainee - J. Dervin

September 15 - September 24

Taking a course in educational psychology at San Francisco State
Read: Flanagan, et.al., Design for a Study of American Youth
Flanagan, Individualizing Education
Flanagan, The PLAN Educational System
Dunn, The PLAN Approach to Curriculum Development
Duffy, Advantages of the Clinical Professor
Dunn, Development of Procedures for Individualization of Educational Programs.

Week of September 26

Read: Mager, R. Preparing Instructional Objectives
Markle, D. Good Frames and Bad
Dillman, F. Instructional Objectives Specificity and Behavior
Flanagan, J. Design for a Study of American Youth
Symposium on Computer-Based Vocational Guidance Systems
Jung, S., Study of the Use of Incentives
Parents magazine issue on "rebirth of education"

Week of October 3

Began work in an AIR project on employer-based career education. Worked on the literature search and review in the area of student goal formulation.
Read: Lennon, A Glossary of 100 Measurement Terms in Test Service Notebook #13.
Dunn, J.A., The OST: Theory, Instrument, and Norms
Steel, L., Data Management Module
Hilgard, Theories of Learning
Simon and Newell, Elements of a Theory of Human Problem Solving.

Week of October 10

Continued work on literature review for employer-based career education.
Did a small amount of work on another AIR project - Development of a system for evaluating regional educational laboratories and educational R&D centers. Did proof reading and some editing.

Read: Buckley, Modern Systems Research for Behavioral Scientists.
Jensen, Intelligence, in Harvard Educational Review.
Retorts to Jensen by several authors.
Piaget, The Science of Education
Miller, Living Systems: Structure and Process.

Week of October 17

Continued work on the Data Analysis module.
Read: Holland & Skinner, An Analysis of Behavior
Skinner, Behaviorism at Fifty
Miller, The Nature of Living Systems
Livesey, A Consideration of the Neural Basis of Intelligent Behavior
Hare, Computer Simulation of Small Group Processes
Miller, Galanter, Pribam, Plans and the Structure of Behavior

Week of October 24 - 30

Home sick most of week.
Read: Kelley, E.C., The Fully Functioning Self.
Continued reading: Holland, J. & Skinner, B., The Analysis of Behavior.
Worked on Data Analysis module.

Week of October 31 - November 6

Began work on apprenticeship assignment. AIR project cooperative Longitudinal Study of Demonstration Education Programs. Initial assignment: 1) Put together three questionnaires for parents and teachers of children in the study. 2) Design format. 3) Write instructions. 4) Determine procedures for follow-up. 5) Decide what incentives should be used.
Continued studying: Steel, L. Data Analysis.
Holland, J. and Skinner, B.F. Analysis of Behavior.
Read: Rogers, Freedom to Learn
Gagne, Human Functions in Systems
Maslow, Basic Propositions of a Growth and Self-Actualization Psychology.

Week of November 7 - 13

Continued apprenticeship work on AIR project--Cooperative Longitudinal Study of Demonstration Education Programs. (See Week of October 31)
Continued studying: Steel, L. Data Analysis.
Rogers, Freedom to Learn.
Began reading: Holt, J. How Children Learn.
Holt, J. How Children Fail.
Hunt, J. Impact of the Giant in Developmental Psychology.

Week of November 14 - 20

Began work on second apprenticeship task. Research and present information on source of funding, nature of studies, and proposal due dates.

Continued work on apprenticeship task for AIR project--Cooperative Longitudinal Study of Demonstration Education Programs.
Completed reading: Holt, J. How Children Learn
Holt, J. How Children Fail
Rogers, Small Projects of the Regional Research Program.
Ottina, Highlights of O.E.'s 1972 Budget.

Week of November 21 - 27

Completed work on apprenticeship task--sources of funding.
Continued apprenticeship work on the Cooperative Longitudinal Study of Demonstration Education Programs.
Read: Spence, Elementary Statistics
Huff,D. How to Lie with Statistics
Weinberg, Inferential Statistics
Revised resume and sent copies to four organizations (listed in Appendix O)

Week of November 28 - December 4

Continued apprenticeship work on Demonstration Education Study.
Read: Lipe, D. and Jung, S. Manipulation of Incentives to Enhance Learning.
Pucel, The Effectiveness of Incentives in Maximizing Questionnaire Returns
Clarke, Statistical Procedures
Flanagan, J. The critical Incidents Technique
Sent resume copies to two more organizations
Arranged job interview with the California Advisory Council for Vocational and Technical Training, Sacramento.

Period of December 5 - 15

Completed apprenticeship work on the Longitudinal Study of Demonstration Education Programs. 1) Three questionnaires were written. 2) Cover letters were written. 3) Follow-up procedures were devised.
Worked on a third apprenticeship task. Assisted in the development of a classification system for educational R&D products for an AIR contract with O.E.
Completed reading: Steel, L. Data Analysis.
Read: Piaget, The Science of Education and the Psychology of the Child.
Sawin, Observing and Interviewing.
Tyler, Test and Measurements.
Sent resume to twelve more organizations in the Bay area.

Trainee - W. Keehn

September 15 - 24

Read or reviewed: Gagne, R., Contributions of Learning to Human Development
Skinner, B., Cumulative Record
Silberman, Crisis in the Classroom
Talent, Design for a Study of American Youth
Data Management module
Miscellaneous Talent documents
Bloom, Problem-Solving Processes of College Students
Bartlette, Thinking
Bruner, et.al., A Study of Thinking
Russel, Human Knowledge
Simon and Newell, Human Problem Solving
Hansen, The Effects of Training on the Cognitive Development of Nursery School Children.

Week of September 26

Read or Reviewed: Mager, Preparing Instructional Objectives
Dillman, Instructional Objectives: Specificity and Behavior
Markle, S., Good Frames and Bad
Guilford, Intelligence Has Th e Facets
Jung, S.M., et.al., A Study of the Use of Incentives in School Systems
Dewey, How We Think
Began work on an AIR project to write a position paper on employer-based career education.
Read background materials.

Week of October 3

Read or Reviewed: Skinner, B., Teaching Science in High School
Lessinger, Every Kid a Winner
Syposium on Computer-Based Vocational Guidance Systems
A Study of Our Nation's Schools in Harvard Educational Review
Berg, Education and Jobs
Continued work on AIR's project in employer-based career education. Wrote one section of this report. Coordinated information among the writers of other sections.

Week of October 10

Read: Miller, Learning of Visceral and Glandular Responses
DeCora, Learning in the Autonomic Nervous System
Continued work on AIR's project in employer-based career education. Writing and coordination of sections of the report.

Week of October 17

Read or Reviewed: Postman and Weingartner, Teaching as a Subversive Activity
Williamson, The Inquiring School: A Study of Educational Renewal
Continued work on AIR's project in employer-based career education.

Week of October 24 - 30

Delivered employer-based career education papers to Far West Lab and spoke with Bela Banathy. Banathy asked him to submit his resume.
Worked on WIN proposal. Helped prepare parts of the proposal and supervised final production.
Began work on a personal position paper. The theme is that education must emphasize problem solving skills.
Read or reviewed: Shaw, Parents and Children.
Williamson thesis
PLAN objectives
Wertheimer, Productive Thinking
Russell, Human Knowledge

Week of October 31 - November 6

Continued work on his position paper. Theme--education must emphasize problem solving skills.
Examined: Educational Development and Research Catalogue (May 1971)

Week of November 7 - 13

Completed work on his position paper (see Week of October 24-30)
Wrote long memorandum on his reactions to the cross-training program.
Revised resume
Read or reviewed: Gregory, The Intelligent Eye
Simon, Science of the Artificial
Bloom, Stability and Change in Human Characteristics
Studied: Steel, L. Data Analysis

Week of November 14 - 20

Proofed and rewrote minor parts of position paper (see Week of October 24-30) Discussed position paper with D. Tiedeman and J. Melnotte.
Began work on another apprenticeship task. He will assist in the development of a taxonomy of knowledge and developmental products for an AIR project to develop a model for evaluating regional educational laboratories and R&D centers.
Read or reviewed: Flanagan, J.C. Personnel Psychology, a Twenty Year Program. Report on Higher Education.
Flanagan, J.C. Studies of the American High School
Shaycoft, M. The High School Years.

Week of November 21 - 27

Continued work on the development of a taxonomy for knowledge and developmental products.
Met with J. Crawford to discuss job possibilities in the Pacific Northwest.

November 29, 1971

Left the program to take a temporary full-time job at the Far West Laboratory for Educational Research and Development.

Trainee - N. Lurowist

September 15 - September 24

Read an RFP on a voucher plan. Helped prepare the schedule of activities for the voucher proposal.
Began Data Analysis module
Read several articles on PLAN

Week of September 26

Read: Mager, R., Preparing Instructional Objectives
Dillman, F., Instructional Objectives: Specificity and Behavior
Markle, S., Good Frames and Bad
Jung, S., et.al., Study of the Use of Incentives in Education and the Feasibility of Field Experiments in School Systems.

Week of October 3

Read: Approximately half of the Symposium on Computer-Based Vocational Guidance Systems

Week of October 10

Read: Six Chapters of Holland, J. and Skinner, B., The Analysis of Behavior
Began work on an AIR project to develop a system for evaluating regional educational laboratories and centers. Helped define and explain evaluation criteria listed in a form to be completed by evaluation judges.
Read Persell, Quality of Research Education

Week of October 17 - 23

Continued work on AIR project to develop a system for evaluating regional educational laboratories and centers.
Arranged to work on a project at the Ravenswood School District. Will work on training of teachers in the use of the computer in education.

Week of October 24 - 30

Worked on WIN proposal. Prepared schedule and man-hours analysis.
Continued work on computer education at Ravenswood school district.
Met with two other trainees to discuss improvements of the Data Analysis module.

Continued work on AIR project to develop a system for evaluating regional educational laboratories and centers.
Read: Chaper in Network Analysis book.

Week of October 31 - November 6

Continued work on both apprenticeship projects. (See Week of October 17-23.)

Week of November 7 - 13

Continued work on both apprenticeship projects (See Week of October 17-23.)
Studied: Sawin, E. Observing and Interviewing.

Week of November 14 - 20

Continued work on both apprenticeship projects (See Week of October 17-23.)
Revised resume.

Week of November 21 - 27

Continued work on both apprenticeship projects (See Week of October 17-23.)
Conducted an ERIC search.

Week of November 28 - December 4

Began work on a new apprenticeship project. He will assist in the development of a self-instructional module for the Far West Concortium for Development, Dissemination, and Evaluation Training. The module is entitled Introduction to Component Design.
Continued apprenticeship at Ravenswood School District--training teachers in the use of the computer in education.

Period of December 5 - 15

Continued work on two apprenticeship projects. (See Week of November 28.)

Trainee - N. Mattson

September 15 - September 24

Read a number of sociological studies which serve as examples of problems which could be investigated using the Talent Data bank. The papers include:

Pavalko, R.M., "Recruitment to Teaching: Patterns of Selection and Retention"
Sewell, W.H. and Shah, V.P., "Parents Education and Children's Educational Aspirations and Achievements"
Sewell, W.H., Haller, A.O., and Portes, "The Educational and Early Occupational Attainment Process"
Sewell, W.H., "Essay Review: The Social Context of Ambition"

Pavalko, R.M., "Aspirants to Teaching: Some Differences Between High School Senior Boys and Girls Planning on a Career in Teaching"

Sewell, W. H., et.al., "On Neighborhood Context and College Plans (I), (II), and (III) and Reply to Turner, Michael, and Boyle".

Sewell, W.H.and Armer, J.M., "Neighborhood Context and College Plans"

Coleman, J.S., Campbell, Hobson, McPartland, Mood, Weinfeld, York, "Equality of Educational Opportunity"

Read Campbell's proposal on Televoting
Read overview of proprietory school study
Studied the DDE module on Data Analysis
Read Silberman, Crisis in the Classroom

Week of September 26

Read Mager, R., Preparing Instructional Objectives
Dillman, F.E., Instructional Objectives, Specificity and Behavior
Analyzed PLAN objectives
Studied Markle, S., Good Frames and Bad
Jung, S.M., Lipe, D., and Wolfe, P.S., Study of the Use of Incentives in Education and the Feasibility of Field Experiments in School Systems

Week of October 3

Read: English, A Consortium Thrust at Professional Accountability, Self-Governance, and Educational Reform
English, Toward a Differentiated Teaching Staff
Computer-Based Vocational Guidance Systems. Symposium
Excerpts from Harris, The Computerization of Vocational Information.
Excerpts from AIR Report, Development and Evaluation of an Experimental Curriculum for the Quincy, Mass. Voc-Tech School
Excerpts from Dunn, The Cognitive Process of the Individual
Crawford, J., et.al., Selection and Description of Educational Products for a Study of the Development and Impact of Such Products.
Jung, S.M., et.al., Product Development Report: First Year Communication Skills Program. Read in preparation for work on this project in the coming weeks.

Week of October 10

Began working on an AIR project designed to examine the process of development of successful educational products. He is analyzing and summarizing material on the development of the Distar System.
Read: Committee for Educational Development Education for the Urban Disadvantaged
Holland, J. and Skinner, B.F., The Analysis of Behavior
How to use ERIC
Lessinger, Every Kid a Winner.

Week of October 17-23

Read: Chapters 1-13 of Holland, J. and Skinner, B., The Analysis of Behavior
Completed Data Analysis module test
Continued work on AIR project to examine the process of development of successful educational products.

Week of October 24 - 30

Continued work on AIR project to examine the process of development of successful educational products.
Continued reading: Holland, J. & Skinner, B., The Analysis of Behavior.
Began reading: Oettinger, A., Run Computer, Run.

Week of October 31 - November 6

Began work on an external apprenticeship at Foothill Community College District. Met with officials including the director of business services. Will work on the five year financial plan, particularly student enrollment predictions.
Continued work on AIR project to examine the process of development of successful educational projects. Began writing report on his work in this project.
Read: Southwest Educational Development Laboratory. Callipers.

Week of November 7 - 13

Continued work on both apprenticeship projects. (See Week of October 31 - November 6.)

Week of November 14 - 20

Continued work on both apprenticeship projects. (See week of October 31 - November 6.) Studied a number of projections of student enrollments.

November 21, 1971

Left the cross-training program to take a job at the Boeing Company.

APPENDIX D

INSTRUCTIONAL MATERIALS AND RESOURCES

This list contains some of the more important materials used during the cross-training program. It is by no means an exhaustive list. For ease of use it is organized by several basic topics.

Evaluation

Hawkridge, D.G., Campeau, P.L., & Trichett, P.K. Preparing evaluation reports: a guide for authors. Final report prepared under contract OEC-0-9-502013-2808(099). Submitted to U.S. Office of Education, U.S. Department of Health, Education, and Welfare. Palo Alto, California: American Institutes for Research, 1969.

Sawin, E. Observing and interviewing. Pre-publication draft. Berkeley: Far West Laboratory for Educational Research and Development, Consortium for Development, Dissemination, and Evaluation Training, 1971.

Scriven, M. The methodology of evaluation. AERA monograph series on curriculum evaluation I: perspectives of curriculum evaluation. Chicago: Rand McNally & Co., 1968.

The Southwest Educational Development Laboratory. Calipers: Planning the systems approach to field testing educational products. Austin, Texas: Southwest Educational Development Corporation, 1969.

Steel, L. & Canter, R. A survey of information/data handling activities in educational DD&E. Pre-publication draft. Berkeley: Far West Laboratory for Educational Research and Development, Consortium for Development, Dissemination, and Evaluation Training, 1971.

Stufflebeam, D.I., Foley, W.J., Gephart, W.J., Guba, E.G., Hammond, R.I., Merriman, H.O., & Provus, M.M. Phi Delta Kappa National Study Committee on Evaluation. Educational evaluation and decision making. Itasca, Illinois: F.E. Peacock Publishers, Inc., 1971.

Suchman, E.A. Evaluative research.: Principles and practice in public service and social action programs. New York: Russell Sage Foundation, 1967.

Wholey, J.S., et al. Federal evaluation policy: Analyzing the effects of public programs. Washington, D.C.: Urban Institute, 1970.

Instruction

Dunn, J.D. The PLAN approach to curriculum definition. Education, 1970, 90, 221-226.

Flanagan, J.C., How instructional systems will manage learning. Nation's Schools, 1970, 86(4), 65-69/120.

Flanagan, J.C. Individualizing education. Education, 1970, 90, 191-206.

Flanagan, J.C. The role of the computer in PLAN. Journal of Educational Data Processing, 1970, 7(1), 1-10.

Holt, J.C. How children fail. New York: Pitman, 1964.

Holt, J.C. How children learn. New York: Dell, 1970.

Jung, S.M., Lipe, D., & Wolfe, P.S. Study of the use of incentives in in education and the feasibility of field experiments in school systems. Final report prepared under contract OEC-0-70-5025. Submitted to Office of Program Planning and Evaluation, U.S. Office of Education, U.S. Department of Health, Education, and Welfare. Palo Alto, California: American Institutes for Research, 1971.

Lessinger, L.M. Every kid a winner: Accountability in education. New York: Simon and Schuster, 1970.

Oettinger, A.G. & Marks, S. Run, computer, run: The mythology of educational innovation--an essay. Cambridge, Mass.: Harvard University Press, 1969.

Postman, N. & Weingartner, C. Teaching as a subversive activity. New York: Delaconte Press, 1969.

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APPENDIX E

SAMPLE OF LOG FORMAT

LOG

NAME:_____ INCLUSIVE DATES:_____

APPRENTICESHIP ACTIVITIES (What? For whom? When?):

AIR STAFF CONTACTS AND GENERAL PURPOSE OF MEETING:

READINGS: (Please indicate whether related to (a) modules or other assignments, (b) apprenticeship activities, (c) personal follow-up on a topic of interest)

Author	Title	Source

JOB SEARCH ACTIVITIES (sources identified, resumes updated, letters sent, interviews set up, outcomes, etc.):

TRANSFER SKILLS AND NEW SKILLS WHICH WOULD BE ATTRACTIVE AND USEFUL TO POTENTIAL EDUCATIONAL R&D EMPLOYERS:

COMMENTS (e.g., suggestions for program, accessibility of materials, reactions to apprenticeship activities, etc.):

APPENDIX F

SAMPLE OF LETTERS FROM SUPERVISORS
OF EXTERNAL APPRENTICESHIP

DE ANZA
COLLEGE

FOOTHILL COMMUNITY
COLLEGE DISTRICT

21250 Stevens Creek Blvd
Cupertino
California 95014
(408) 257-5550

September 22, 1971

Dr. Eugene Millstein
American Institutes for Research
P. O. Box 1113
Palo Alto, California 94302

Dear Dr. Millstein:

In accordance with our conversation, this is to advise you that Mike Ausloos is assigned to work with Florin Caldwell, Director of Institutional Research at De Anza College, on a supervised apprenticeship basis for the period of September 22, 1971 to December 15, 1971.

The apprenticeship will include professional supervision, work experience, provision for office/work space, access to the library, and other instructional materials, use of research facilities and equipment, staff consultation, and limited clerical assistance.

During Mr. Ausloos' apprenticeship period, I see four major areas of concentration which should take up most of his assigned time:

1. To write and implement a proposal to the Luke B. Hancock Foundation for developing educational programs in Environmental Education in the Sunnyvale Elementary School District and in the San Jose Unifed School District.

2. To develop the curriculum for an in-service training workshop for elementary school teachers in the area of Environmental Education and an in-service workshop for teachers in the use of computers to help solve environmental problems.

3. To complete a proposal to the United States Department of Health, Education, and Welfare under the Environmental Education Act of 1970 (Public Law 91-516) which would provide for a state-wide program of in-service Environmental Education for elementary school teachers.

4. To become knowledgeable in the area of "Grantsmanship" and particularly in the areas of funding evaluations of on-going educational programs.

Sincerely yours,

A. Robert DeHart
President

ARD:e

Foothill and De Anza Colleges

FOOTHILL JUNIOR COLLEGE DISTRICT

12345 EL MONTE ROAD • LOS ALTOS HILLS, CALIFORNIA 94022 • TELEPHONE (415) 948-8590

November 12, 1971

Dr. Eugene Millstein
American Institute for Research
P. O. Box 1113
Palo Alto, California 94302

INTERN PROJECT

Confirming our phone conversation this is to advise that we are delighted to have your trainees, Neil Mattson and Bonita Berger assigned to the Foothill Community College District on a supervised apprenticeship project from November 1 to mid December.

As you are aware, they are reviewing and up-dating the District's five year plan. This involves not only an accurate analysis of recently available historical data but, more important in my mind, a fresh and objective professional consideration of our premises and formulas for projection. It is my hope to get a meld of the traditional academic approach and the contemporary industrial methods.

Obviously, this project has and will continue to involve professional supervision on my part, the District Controller, our Director of Institutional Research and others of our staff. They have had complete access to our records and past studies as well as any staff resources needed for consultation. We have assigned them an office where they are free to accumulate and organize material for access as their schedule requires.

We feel that this approach to the assignment will give them a valuable insight to the higher education milieu while providing the District a product which would otherwise not be available to us.

William B. Cutler
Director, Business Services

WBC:cm

APPENDIX G

CLASSIFIED ADVERTISEMENT

E 18 The Seattle Times
Sunday, August 15, 1971

380 Men, Women Wanted

ARE YOU AN UNEMPLOYED AEROSPACE WORKER?

Non-profit educational research institute in the San Francisco Bay area will conduct a small pilot program to help a limited number of male and female aerospace workers into the field of educational research and development. The 13-week program will include apprenticeship work on projects and study of selected topics and problems in education such as product evaluation, curriculum development, data analysis, etc. Assistance in job placement provided. Applicants must have BS or BA and be willing to temporarily relocate in SF area. Transportation costs, living expense stipend, and allowance for dependants offered. For further information call 543-1084. University of Washington, August 15, 16, or 17, 8 a. m. to 4:30 p. m.

APPENDIX H

PRESS RELEASE AND NEWSPAPER ARTICLES

FROM: Eugene Millstein
American Institutes for Research
P.O. Box 1113
Palo Alto, California 94302
(415) 328-3550

August 10, 1971

FOR RELEASE: August 13, 1971

UNEMPLOYED AEROSPACE PROFESSIONALS TO WORK IN EDUCATIONAL RESEARCH

A new program to assist male and female unemployed aerospace professionals shift to work in the field of education is being developed in Palo Alto, California. The program is an experimental effort limited to a small number of aerospace workers from the Seattle and San Francisco Bay areas. It will be a 13 week work-study program located at an educational research institution. Trainees will study the field of education and concentrate on redirecting their own particular skills toward educational problems.

The developers of the program feel that aerospace professionals can be of great value in the solution of educational problems. Technical skills in the areas of research design, systems analysis, and data processing have particular value in educational research. The trainees will work on such tasks as developing new learning materials, evaluating the effectiveness of educational projects and products, performing background research on programs such as Sesame Street, and assisting school administrators in making systematic decisions. The demand for professionals in this area is expected to grow during the coming decades.

The American Institutes for Research is developing the program under a grant from the U.S. Office of Education. The program will run from September 15 to December 15, 1971. Trainees will spend mornings studying selected topics and problems in education. They will spend afternoons as staff apprentices on applied research projects. The trainees accepted for the program must be willing to relocate in the San Francisco area for a period of approximately 13 weeks. A travel and living allowance will be provided. The trainees will also be given assistance in locating appropriate job openings in the field of education.

MORE

If this experiment is successful, plans for an expanded program in a variety of settings will be considered. Designers of the program hope it will serve as an example of how physical science skills may be directed to solve some of our contemporary social problems.

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PALO ALTO TIMES, PALO ALTO, CALIF., THURSDAY, AUG. 19, 1971—7

Aerospace jobless

Training slated in education

A program to help unemployed aerospace professionals train for work in the field of education will start Sept. 15 at the American Institutes for Research, an educational research institution in Palo Alto.

The program, for a small number of men and women aerospace workers from the Bay Area and Seattle, will be a 13-week combination work-study course.

Trainees will study the field of education and concentrate on redirecting their own skills toward educational problems.

Technical skills in the areas of research design, systems analysis, and data processing are expected to have particular application. Trainees will develop new learning materials, evaluate educational projects and products, perform background research on programs, and assist school administrators in making systematic decisions.

The American Institutes for Research is developing the program under a grant from the U.S. Office of Education. Trainees are to be given help in locating job openings in education, as well as travel and living allowances.

Sunday, August 15, 1971 The Seattle Times

Idle space workers to be trained

About 20 Seattle-area unemployed aerospace workers will be selected for a pilot program being developed by the American Institutes for Research at Palo Alto, Calif.

The 13-week work-study program will concentrate on redirecting the skills of aerospace professionals toward educational problems.

Applications may be obtained at the Educational Foundation, 201 Miller Hall, University of Washington. Applications will be received through Saturday and candidates will be notified by September 1.

Persons applying are required to have a bachelor of arts or science degrees. Travel and living allowances will be provided. Trainees will receive assistance in finding jobs at the end of the sessions.

APPENDIX I

CONTENT OF FACT BOOKLET

A Program to Prepare Unemployed Aerospace Workers

for

Jobs in Educational Research and Development

QUESTIONS AND ANSWERS FOR APPLICANTS

AMERICAN INSTITUTES FOR RESEARCH

Post Office Box 1113 / Palo Alto, California 94302

WHAT IS THE PURPOSE OF THIS PROGRAM?

There are many male and female unemployed aerospace workers whose skills and talents are being lost by society. One solution to this problem is to redeploy these skills from problem solving in the physical sciences to problem solving in the social sciences. This program is designed to help aerospace workers transfer their scientific research and development skills to the field of education through a short-term apprenticeship work-study program. At the present time, the program is viewed as a pilot study of the feasibility of this approach. Only a small number of trainees will be selected. If the pilot study is successful, plans for an expanded program will be considered.

WHO ARE THE SPONSORS OF THE PROGRAM?

The design of the program and responsibility for its administration lie with the American Institutes for Research in its Palo Alto, California office. AIR is a private non-profit educational and scientific research institution engaged in research and service in the behavioral, social, and educational science areas. Over the years, AIR has completed more than 800 projects in education and the behavioral sciences. The 450 persons employed by AIR in its 5 locations include researchers, technical staff, administrative and clerical personnel, and other support staff. Approximately 100 of the employees are senior scientists who hold doctoral degrees in education, psychology, sociology, statistics, engineering, and other areas of the physical and social sciences.

Financial support is provided through a grant from the Division of Research and Development Resources, National Center for Educational Research and Development, United States Office of Education.

WHERE WILL I BE TRAINED?

Most of the training experiences will take place at AIR in Palo Alto, where office space, instructional materials, and staff will be located. Field trips and some experiences at other educational research and development institutions are scheduled.

WHEN DOES THIS PROGRAM START AND HOW LONG DOES IT LAST?

Trainees will begin the apprenticeship work-study program on Wednesday, September 15, 1971. The program will run 13 weeks, terminating on Wednesday, December 15, 1971. The normal work day is from 8:30 am to 5:00 pm. Trainees may also expect to spend some after-time hours in directed study, personal research projects, and the like.

WHAT WILL THE TRAINING INVOLVE?

Instructional experiences will include seminars, directed independent studies, and specific project apprenticeships. Morning sessions will be devoted to formal seminars and independent study. Afternoons will be devoted to apprenticeship work. Instruction will be handled by various AIR staff members and will be tailored to the particular needs of the individual trainees. Visiting speakers will also be invited to participate in the seminars.

The following general subject areas will be covered:

1) Orientation to Education and Educational Problems. This area is designed to introduce the trainee to the basic educational setting. Trainees will talk with teachers and administrators, view videotapes of schools in action, and make field trips to schools. They will become familiar with the structure and administration of public schools and the legal, social, and political constraints within which they operate. Educational problems including learning and classroom management will be covered.

2) Introduction to Educational Research and Development. This will be an overview of the major topics, efforts, and activities in educational research and development. The content will include such topics as learning theory, evaluation, educational technology, behavioral research methods and instrumentation, and basic terminology. Field trips to other educational research and development institutions will be included.

3) Comparative Task and Skill Transfer Analysis. The objective of this topic area is to compare and contrast the tasks and requisite skills of research and development in the physical sciences with research and development in the behavioral sciences and particularly education. Areas of comparison might include settings, problem areas, organization and administration, and approach to problem solving. A good deal of this content depends heavily on the trainees themselves. The comparison will serve to highlight those areas in educational research in which they are already competent and to point out task and skill areas in which trainees need more familiarization or study. These identifications will be particularly valuable in defining individual objectives for each person in the training program.

4) Requisite Skills Development. This area will be treated through formal sub-group seminars whenever trainee needs coincide. Typically, however, directed independent studies will be more appropriate. Special problems or topics will be trainee electives. Decisions will be based on their existing skills, the conclusions of the formal sessions on comparative task analysis, and the nature of their project apprenticeship and interests. The number of individually treated topics will depend on all of these factors, plus the intensity with which a trainee wishes to pursue a topic.

While the total pool of topics will evolve and finalize as the work-study program progresses into its third and fourth weeks, the pool would probably include: a) systems analysis, planning and control techniques (e.g., PERT, PPBS); b) data processing; c) educational statistics and data analysis; d) data collection, organization, and presentation; e) instrument development, questionnaire design, standardized testing; f) material production and distribution; g) field testing; h) sampling; i) research report writing; j) scaling; and k) educational information retrieval (e.g., ERIC system).

5) Job Prospects and Career Development Strategies. This area will include a summary of employment opportunities. The various settings in which educational R & D takes place will be analyzed. Long range career plans will be discussed. Proposal writing and project funding will also be covered.

A number of sessions of formal instruction toward the end of the three month program will be devoted to the format, art, and technique of proposal writing. Trainees will examine and discuss a variety of proposal types and topics. During this time each trainee will actually write proposals.

Discussions in the area of project funding will include: 1) a survey of educational R&D sponsors, 2) the system of contacts and contracts, and 3) project type or topic and logical funding sources.

Topics 1, 2, 3, and 5 will be covered in formal seminars. Topic 4 will be covered primarily in the directed independent study. Although instruction will be largely sequential, frequent overlap and review will occur. Learning in all five areas will be reinforced in the project apprenticeship. During the apprenticeship, trainees initially will survey a large number of ongoing projects; they will receive specially prescribed project experience, and then engage in project work based on their own interests.

WHAT KIND OF BACKGROUND MUST I HAVE TO BE ELIGIBLE?

To apply for the training program, an applicant must be an unemployed aerospace worker who holds a B.S. or B. A. degree. For survey purposes, the application form will include questions on routine demographic data on such factors as age, sex, and marital status. In no way whatsoever, will this information be used to influence eligibility or selection. Individuals of all ages, sex, and ethnic backgrounds are encouraged to apply.

HOW WILL TRAINEE SELECTION BE MADE?

Selection will be based on a written application, a test of general knowledge of selected topics in education, academic ability, and work history and experience. Relevant experiences which indicate interest in the field of education and the possibility of interest in a long range career commitment are desirable.

WILL I BE PAID DURING TRAINING?

Trainees will receive a stipend of $75 per week for the 13 weeks of the program. In addition, support for dependents will be provided at the rate of $15 per week per dependent for 13 weeks.

For trainees from out of state, transportation costs equivalent to one round trip air fare per trainee will be provided.

DO I PAY INCOME TAX ON MY STIPEND?

No

WHAT KINDS OF ACTIVITIES ARE INVOLVED IN EDUCATIONAL RESEARCH AND DEVELOPMENT?

Educational R & D occurs in a variety of institutions including federally sponsored centers and laboratories, profit and non-profit research organizations, private corporations, school systems, federal and state departments of education, and publishing companies. There are a broad range of activities. Examples include developing new learning materials, evaluating the effectiveness of educational projects and products, performing background research on programs such as Sesame Street, designing scheduling systems for big city schools, and assisting educational administrators in making systematic decisions.

WILL I BE GUARANTEED A JOB?

No. Job placement is not guaranteed. However, a recent manpower needs study in the Bay Area has suggested the need for educational research and development workers. AIR will make preliminary contact with potential employers, assist trainees in making personal contacts and job inquiries, and assist in interview arrangements.

In addition, contact will be maintained with California's Human Resources Development Agency, the Department of Labor's Manpower Administration, and other agencies active in implementing the administration's new aid program for the unemployed. Under this program, funds are made available to assist the jobless in investigating job possibilities away from home, cover moving costs necessitated by job changes, and underwrite on-the-job training.

WHAT KIND OF JOB RESPONSIBILITIES AND SALARY CAN I EXPECT IF I AM SUCCESSFUL IN FUTURE JOB PLACEMENT?

Trainees who successfully locate jobs in educational R & D cannot expect to enter the field at the same high levels of responsibility or salary which were probably typical of their employment in the aerospace industry. Entry level salaries of R & D personnel with a B.S. or B.A. and some experience might be as low as $8,000 to $12,000. Additional degrees, specific technical skills, such as

data processing skills and/or a base of related experience could raise these figures by as much as $4,000.

The entry level professional is likely to have some opportunity of responsibility for his own work, but is unlikely to be autonomous in final decision-making. The field has significant advancement opportunity potential and on-the-job development opportunity. As in any industry, experience and demonstrated competency are reflected in increased staff and decision-making responsibilities.

WHERE ARE EDUCATIONAL R & D JOBS LOCATED?

Jobs are likely to be located in or near large urban areas which are major commercial and educational centers for their region of the country.

WHAT ARRANGEMENTS WILL BE MADE FOR LIVING ACCOMMODATIONS DURING TRAINING?

Arrangements for special motel rates will be made by AIR for those trainees so desiring. Rates can be obtained for approximately $5 per day per person with double occupancy. Others may wish to rent a room, apartment or house, or defray living expenses by sharing facilities with other trainees. Furnished studio apartments in the area start at approximately $125 per month; furnished one bedroom apartments start at approximately $145, while furnished two bedroom apartments and modest houses are unlikely to start at less than $180 per month. The costs of these arrangements will be the trainee's responsibility.

WILL I NEED A CAR?

Some personal transportation will be essential. AIR is located in the foothills overlooking Stanford University and is not near public transportation. A car pool with other trainees might be considered, but the trainee might wish more independence in his mobility. All transportation expenses while in the area are borne by the trainee.

WHAT PROVISION WILL BE MADE FOR MY HOUSEHOLD AND FAMILY?

No specific benefits for the households and families of trainees other than the $15 per week per dependent allowance are available.

APPENDIX J

COPY OF REJECTION LETTER

Dear Mr.

We appreciate your application to our program to prepare unemployed aerospace workers for jobs in educational research and development. Unfortunately, there were many applications and only a limited number of spaces available. We very much regret our inability to invite you to join the program. It should be emphasized that a large number of highly qualified applicants had to be turned away solely because of a lack of space.

I would personally like to wish you the best of luck in finding a job commensurate with your abilities and interests.

Sincerely,

Eugene J. Millstein
Project Director

iky

APPENDIX K

COPY OF REJECTION LETTER FOR FINALISTS

Dear Mr.

With a great deal of regret I must inform you that we are unable to invite you to join our training program. Your application did rank near the very top in a field of more than 100 applicants. Unfortunately, there were very few spaces available. Much to our dismay we have had to turn down several highly qualified applicants such as yourself solely because of a lack of space.

I'd like to thank you for taking the trouble to come down to the University and I certainly wish you the best of luck in finding a job commensurate with your considerable qualifications.

Sincerely,

Eugene J. Millstein
Project Director

iky

APPENDIX L

STATEMENT ON NUMBER OF DEPENDENTS

TO: Eugene Millstein

FROM:

DATE:

This is to inform you that I have _____ dependents (not including myself). Dependent is taken as defined by the Internal Revenue Service.

_____

Signature

_____

Date

APPENDIX M

STATEMENT ON TRAVEL ALLOWANCE

I hereby formally accept enrollment in the American Institutes for Research program to cross-train aerospace professionals for work in educational research and development. In the event that I leave the program early, for reasons other than health, extreme family hardship, or acceptance of a job in educational research and development, I agree to return a portion of the advanced travel allowance not to exceed a proportion prorated on the length of attendance at the Institute.

_____

Signature

_____

Date

APPENDIX N

EXAMPLE OF EMPLOYMENT INQUIRY LETTER

November 22, 1971

Dear Dr.

Dr. Dunn suggested I write to you with regard to several physical scientists who are seeking jobs in educational R&D. These people are participating in a three-month AIR program designed to help them extend their skills into the field of educational R&D. Their skills include expertise in systems analysis, statistical techniques, computer programming, report writing, proposal development, etc. The program has been quite successful; all participants have worked effectively and made important contributions to ongoing AIR projects. In general, participants have the combination of experience and training in educational research in addition to a broad background and extensive experience in engineering and the physical sciences. I might add that of the more than 170 engineers and scientists who applied to the program, the six participants were selected because they possessed special skills and interests very useful in educational R&D.

I am enclosing the resumes of two of the participants who are from the Northwest. Both are quite flexible about position and salary. Please let us know if you wish to talk with any of them about employment. There is a possibility that federal funds administered through the states of California or Washington will pay for an applicant's interview trip. In addition there is a federal program administered through the states which is designed to help unemployed defense workers shift to new industries. Thus it is possible, depending on specific job definitions, that up to $2,000 of new employee's salary would be subsidized.

Thank you.

Sincerely,

Eugene J. Millstein
Project Director

iky

Enclosures

APPENDIX O

ORGANIZATIONS TO WHICH EMPLOYMENT INQUIRIES WERE MADE

Inquiries were made both in person and by mail. This list includes organizations contacted by trainees themselves and organizations contacted by AIR staff members on behalf of trainees.

Educational Research and Development Companies and Institutes (profit and non-profit)

- Education Engineering Associates
- Educational Development Corporation
- Educational Testing Service
- HumRRO
- McGraw-Hill
- Science Research Associates
- Stanford Research Institute
- Technica Education Systems
- Westinghouse Learning Corporation

Other Companies

- Lockheed (Human Factors)
- Sylvania (Socio-Systems)
- United California Bank (Training Director)
- Regional Laboratories and Centers

Regional Laboratories and Centers

- Arizona Center for Early Childhood Education
- Center for Vocational and Technical Education (Ohio State University)
- Far West Laboratory for Educational Research and Development
- Northwest Regional Educational Laboratory

States and Counties

California Advisory Council for Vocational and Technical Training
Santa Clara County Center for Planning and Evaluation
South Dakota Department of Public Instruction
Wisconsin State Department of Public Instruction

Universities and Colleges

DeAnza Community College
Foothill Community College District
Gavilan Community College
Stanford University
University of Virginia
University of Washington, School of Education

ERIC Clearinghouse
SEP21 1972
on Adult Education